THE ATHENÆUM

Journal of English and Foreign Literature, Science, and the Fine Arts.

No. 1142. LONDON, SATURDAY, SEPTEMBER 15, 1849. PRICE FOURPENCE Stamped Edition, 5d

For the convenience of Subscribers residing in remote places, the weekly numbers are reissued in Monthly Parts, stitched in a wrapper, and forwarded with the Magazines.—Subscriptions for the Stamped Edition for the Continent, for not less than Three Months, and in advance, are received by M. BAUDRY, 3, Quai Malaquais, Paris, or at the Publishing Office, 14, Wellington-street North, Strand, London. For France and other Countries not requiring the postage to be paid in London, 25fr. or 1l. 2s. the year. To other Countries, the postage in addition.

[JAMES HOLMES, TOOK'S COURT, CHANCERY LANE.

UNIVERSITY COLLEGE, LONDON.—FACULTY of MEDICINE. — Session 1849-50. — The CLASSES will COMMENCE on the 1st of October, when Professor WALSHE will deliver an INTRODUCTORY LECTURE, at 3 o'clock.

CLASSES in the order in which Lectures are delivered during the day:—

ANATOMY—Professor Quain and Professor Ellis.
ANATOMY and PHYSIOLOGY—Professor Sharpey, M.D.
CHEMISTRY—Professor Graham.
COMPARATIVE ANATOMY—Professor Grant, M.D.
SURGERY—Professor Arnott.
MIDWIFERY—Professor Murphy, M.D.
MEDICINE—Professor Walshe, M.D.
PRACTICAL ANATOMY.—The Pupils will be directed in their studies during several hours daily by Professor Ellis, and Mr. Cadge, Demonstrator.
ANALYTICAL CHEMISTRY. — Professor A. W. Williamson, Ph.D., 9 a.m., 4 p.m.

SUMMER TERM.

The following subjects will be taught during the Summer Term:—
BOTANY—Dr. Lindley.
MIDWIFERY—Dr. Murphy.
PATHOLOGICAL ANATOMY—Dr. Jenner.
COMPARATIVE ANATOMY and ZOOLOGY.—Dr. Grant.
FORENSIC MEDICINE—Dr. Carpenter.
PRACTICAL CHEMISTRY—Mr. Williamson.
MATERIA MEDICA—Professorship vacant.

Hospital Practice daily throughout the year:—
Physicians—Dr. Walshe, Dr. Parkes.
Assistant-Physician—Dr. Garrod.
Obstetric Physician—Dr. Murphy.
Surgeons—Mr. Arnott, Mr. Quain, Mr. Morton.
Assistant-Surgeons—Mr. Erichsen, Mr. Marshall.
Dental Surgeon—Mr. Duranceé George.

MEDICAL CLINICAL LECTURES, by Dr. Walshe, also by Dr. Parkes, Professor of Clinical Medicine, whose special duty it is to train the Pupils in the practical study of disease at the bedsides during the visits, and also by a series of lessons and examinations on the physical phenomena and diagnosis of disease to classes consisting of a limited number, and meeting at separate hours.

SURGICAL CLINICAL LECTURES, by Mr. Arnott, and specially by Mr. Quain.

Prospectuses may be obtained at the office of the College.

RESIDENCE OF STUDENTS.—Several of the Professors receive Students to reside with them; and in the office of the College there is kept a register of parties unconnected with the College who receive boarders into their families; among these are several medical gentlemen. The register will afford information as to terms and other particulars.

At University Hall, an institution in the neighbourhood of the College, collegiate residence, under the superintendence of a Principal, is provided for a limited number of Students.

WALTER H. WALSHE, M.D., Dean of the Faculty.
CHAS. C. ATKINSON, Secretary to the Council.

August, 1849.

The Lectures to the Classes of the Faculty of Arts commence on the 16th of October.
The Junior School opens on the 25th of September.

UNIVERSITY COLLEGE, LONDON.—FACULTY of ARTS and LAWS.—Session 1849-50.—The SESSION will COMMENCE on TUESDAY, October 16, when Professor WILLIAMSON, Ph. D., will deliver an INTRODUCTORY LECTURE, at 3 o'clock precisely.

CLASSES.

LATIN—Professor Newman.
GREEK—Professor Malden, A.M.
HEBREW—Teacher, the Rev. H. W. Marks.
ENGLISH LANGUAGE and LITERATURE—Prof. Scott, A.M.
FRENCH LANGUAGE and LITERATURE—Prof. Merlet.
ITALIAN LANGUAGE and LITERATURE—Prof. Gallenga.
SPANISH TEACHER—Señor Gil de Tejada.
GERMAN LANGUAGE—Professor Heimann, Ph. D.
COMPARATIVE GRAMMAR—Professor Key, A.M.
MATHEMATICS—Professor De Morgan.
NATURAL PHILOSOPHY and ASTRONOMY—Professor Potter, A.M.
CHEMISTRY—Professor Graham.
PRACTICAL CHEMISTRY—Professor Williamson, Ph. D.
CIVIL ENGINEERING—Professor Harman Lewis, A.M.
MECHANICAL PRINCIPLES of ENGINEERING—Professor Eaton Hodgkinson.
MACHINERY—Professor Woodcroft.
ARCHITECTURE—Professor Donaldson, M.I.B.A.
DRAWING—Teacher, Mr. Moore.
GEOLOGY—Professor Ramsay, F.G.S.
MINERALOGY—Mr. E. J. Chapman.
BOTANY—Professor Lindley, Ph. D.
ZOOLOGY (RECENT and FOSSIL)—Professor Grant, M.D.
PHILOSOPHY of MIND and LOGIC—Professor the Rev. J. Hoppus, Ph. D.
ANCIENT and MODERN HISTORY—Professor Creasy, A.M.
LAW—Professor Marshman, A.M.
JURISPRUDENCE—(Vacant).
SCHOOLMASTERS' CLASSES—Professors Newman, Malden, De Morgan, and Potter.

RESIDENCE OF STUDENTS.—In the Office of the College there is kept a register of parties who receive boarders into their families. The register will afford information as to terms and other particulars.

At University Hall, an Institution in the neighbourhood of the College, collegiate residence, under the superintendence of a Principal, is provided for a limited number of Students.

A Flaherty Scholarship of 45l. per annum, tenable for four Years, will be awarded in the Session of 1849-50, to the best proficient in Classics among the Students of the College.

Three Andrews Scholarships, of 50l. a year each, will be awarded to the three best proficients in Latin, Greek, Mathematics, and Natural Philosophy. Candidates must have been, during the Academical year immediately preceding, students in the College or pupils in the school.

Prospectuses and further particulars may be obtained at the Office of the College.

ALEXANDER J. SCOTT, A.M., Dean of the Faculty.
CHAS. C. ATKINSON, Secretary to the Council.

September, 1849.

The Session of the Faculty of Medicine commences on the 1st of October.
The Junior School opens on the 25th of September.

CIVIL ENGINEERING, ARCHITECTURE, and CONSTRUCTION.—The Session for the Department of Civil Engineering, Architecture, and Machinery will commence on TUESDAY, the 16th of October.

This Department consists of the following Classes:—
MATHEMATICS—Prof. De Morgan.
NATURAL PHILOSOPHY—Prof. Potter, A.M.
CHEMISTRY—Prof. Graham.
PRACTICAL CHEMISTRY—Prof. Williamson, Ph.D.
CIVIL ENGINEERING—Prof. Harman Lewis, A.M.
MECHANICAL PRINCIPLES OF ENGINEERING. — Prof. Eaton Hodgkinson.
MACHINERY—Prof. Bennet Woodcroft.
ARCHITECTURE AND CONSTRUCTION—Prof. Donaldson, M.I.B.A.
GEOLOGY—Prof. Ramsay, F.G.S.
DRAWING—Teacher, Mr. C. B. Moore.

Prospectuses and further particulars may be obtained at the Office of the College.

ALEXANDER J. SCOTT, A.M. Dean of the Faculty of Arts and Laws.
CHAS. C. ATKINSON, Secretary to the Council.

University College, London, Sept. 1849.

PRACTICAL and ANALYTICAL CHEMISTRY. — BIRKBECK LABORATORY, UNIVERSITY COLLEGE, LONDON.—Gentlemen desirous of engaging in Chemical Research, and Students seeking instruction in Elementary Analysis, will find every requisite in this Laboratory, erected by the Council of the College for practical instruction in Organic and General Chemistry and the principles of Chemical Research, as applied more particularly to Agriculture, Medicine, and the Manufacturing Arts, under the superintendence of Mr. GRAHAM, Professor of Chemistry, and Dr. WILLIAMSON, Professor of Practical Chemistry. The Laboratory will be opened daily from 9 a.m. to 4 p.m. except on Saturdays, when it will be closed at 1 o'clock, from the 1st of October to the end of July. Students occupy themselves with pursuits of their own choice, if sanctioned by the Professors, by whom they are assisted with needful instruction and advice.

Fees:—Session, 20s. 5s.; Six Months, 18s. 10s.; Three Months, 10s. 10s.; One Month, 4s. 4s.

COURSE OF GENERAL CHEMISTRY.—Professor Graham's Lectures are daily, except Saturday, from the 16th of October to the 15th of April, at 11 a.m. Fee for perpetual admission, 2l.; whole term, 6l.; half term, 3l.

A Prospectus, with full details, may be had at the Office of the College.

ALEXANDER J. SCOTT, A.M. Dean of the Faculty of Arts.
WALTER H. WALSHE, M.D. Dean of the Faculty of Medicine.
CHAS. C. ATKINSON, Secretary to the Council.

September, 1849.

UNIVERSITY COLLEGE, LONDON.—The PROFESSORSHIP of JURISPRUDENCE is now VACANT, in consequence of the resignation of Mr. HARGREAVE on being appointed by Her Majesty one of the Commissioners for the Sale of Incumbered Estates in Ireland. Candidates are requested to send in their applications and testimonials on or before Saturday, the 3rd of November.

CHAS. C. ATKINSON, Secretary to the Council.

September 7, 1849.

UNIVERSITY COLLEGE, LONDON.—JUNIOR SCHOOL.—Under the Government of the Council of the College. Head Master—THOMAS HEWITT KEY, A.M.

The SCHOOL will OPEN on TUESDAY, the 25th of September. The Session is divided into three Terms—viz.: from the 25th of September to Christmas, from Christmas to Easter, and from Easter to the 4th of August.

The yearly payment for each Pupil is 18l., of which 6l. are paid in advance in each Term. The hours of attendance are from a quarter-past Nine to three-quarters-past Three o'clock. The afternoons of Wednesday and Saturday are devoted exclusively to Drawing.

The subjects taught are Reading, Writing, the English, Latin, Greek, French and German Languages, Ancient and English History, Geography, both Physical and Political, Arithmetic and Book-keeping, the Elements of Mathematics and of Natural Philosophy and Drawing.

Any Pupil may omit Greek, or Greek and Latin, and devote his whole attention to the other branches of Education. There is a general Examination of the Pupils at the end of the Session, and the Prizes are then given.

The discipline of the School is maintained without corporal punishment.

A Monthly Report of the conduct of each Pupil is sent to his Parent or Guardian.

Further particulars may be obtained at the Office of the College.

CHAS. C. ATKINSON, Secretary to the Council.

The College Lectures in the Classes of the Faculty of Medicine commence on the 1st of October; those on the Faculty of Arts on the 16th of October.

September, 1849.

ITALIAN LANGUAGE AND LITERATURE.

MR. A. GALLENGA, Professor of the Italian Language and Literature in University College, London, Author of MARIOTTI'S 'Italy, Past and Present,' offers his services as a Private Instructor in London and its vicinity.—Address, A. GALLENGA, 21, Thurloe-square, Brompton.

HYDE PARK COLLEGE, for LADIES.—The COURSES of LECTURES commenced on the 30th of July. Terms for Resident and Daily Pupils to be learned at the College. Ladies attending the Lectures only to pay a fee of One Guinea per Course.—Address Mrs. KELSO, 82, Oxford-terrace.

COLLEGE FOR LADIES, 47, Bedford-square.—Some of the founders of Queen's College, Harley-street, encouraged by the very marked success of that Institution, propose to found a College, to be constituted on similar principles, in another quarter of the metropolis. Bedford-square has been chosen as a suitable situation, from its being the centre of a populous and wealthy neighbourhood, where such advantages as this College is likely to afford will be particularly valued. The College will be opened for the reception of pupils on the 1st of October, and the Classes will be instructed by Professors of King's College, University College, and Queen's College, with others. All arrangements which relate to the conduct and convenience of the pupils will be under the management of a Committee of Ladies. A Prospectus, giving the names of the Professors and of the Committee of Ladies, with a general outline of the system of education it is proposed to adopt, may be had, by applying to the Secretary, 47, Bedford-square.

BELGIAN CONSULATE.—The OFFICE of the CONSULATE is REMOVED from Throgmorton-street, Copthall-court, TO No. 6, KING WILLIAM-STREET, MANSION HOUSE.

PICTURES, CABINETS, CARVINGS, ORGANS, and ARTICLES of TASTE, from Stowe, Lady Blessington's, Aston Hall, Willow Bank, &c.—Mr. WALESBY respectfully informs the Nobility and Gentry that he has removed his Collection to No. 12, Old Bond-street.

BRITISH NATURAL-HISTORY SOCIETY.—Under this name an Association is being organized to carry on researches in British Natural History. It is proposed to keep a staff of Collectors located in such districts as are known to be rich in natural productions, either fossil or recent, and to distribute among the Institutions or Individuals subscribing to the Society suites of the specimens collected. The Hampshire Coast, including the Isle of Wight, has been selected for the commencement of the Society's operations, and above 12,000 of the beautiful Fossils of Barton Cliff and Colwell Bay are already distributed among the Subscribers. More detailed information may be had upon application to "The Secretary of the British Natural-History Society, York."

Extract from the Minutes of the Norfolk and Norwich Museum Committee of September 5, 1849, transmitted officially to the Secretary of the British Natural-History Society.

"The Committee of the Norfolk and Norwich Museum having inspected the very interesting collection of Hampshire Tertiary Fossils received from the British Natural-History Society through the Subscription of J. H. Gurney, Esq., wish to record their opinion, that the extensive distribution of collections of choice and properly classified specimens is eminently calculated to promote a taste for the study of Natural History, and that the British Natural-History Society established to carry out this object is entitled to the support of all Public Institutions connected with Natural-History Museums."

HOME EDUCATION.—Two LADIES, of much experience in Tuition, residing with their mother a short distance from Town, desire to RECEIVE Two or Three YOUNG LADIES to EDUCATE. The Pupils intrusted to their charge possess all the comforts of the domestic circle, united with the wholesome discipline so important in the formation of a well-regulated mind. Terms, including a liberal English Education, French, and Music, 30 guineas per annum. Professors on moderate terms. References exchanged.—Address, 4, Grove-place, North Brixton.

HIGH SCHOOL, in connexion with the LIVERPOOL MECHANICS' INSTITUTION.—WANTED, for the HIGH SCHOOL, a thoroughly efficient MASTER, to teach Natural History and all the Branches of Mathematics, in particular Arithmetic. Salary 120l. Thirty hours weekly to be devoted to teaching. Apply to Dr. IRINE, Head Master, at the Institution, on or before the 22nd instant.

W. NICHOL, Secretary.

Liverpool, September, 1849.

HANWELL COLLEGE and PREPARATORY SCHOOL, MIDDLESEX.—Principal, the Rev. J. A. EMERTON, D.D. Oxon. Parents and Guardians desirous of selecting a school in a healthy situation, combining (on liberal terms) the intellectual advantages of a collegiate, professional, or commercial course, with sound religious instruction, moral and physical training, with domestic and medical care, may obtain a Prospectus on application to the Secretary. The TERM will commence on THURSDAY, 4th of October.

SCOTTISH INSTITUTION, FOR THE EDUCATION OF YOUNG LADIES, 9, MORAY PLACE, EDINBURGH.

The SIXTEENTH SESSION of the INSTITUTION, as advertised in this Paper of 2nd of June last, COMMENCES on MONDAY, October 1st, 1849. Prospectuses, containing full information when requested, sent *free* to any part of the kingdom.

TO FAMILIES RESIDING IN THE VICINITY OF RUSSELL SQUARE.

A CAMBRIDGE B.A. of some experience in Tuition, RECEIVES the SONS of GENTLEMEN only as DAY SCHOLARS, to prepare for any of the Public Schools, and is desirous of increasing his present number. The terms are moderate, and the course embraces all the branches of a good Education, including French. The highest references can be given.—For further particulars apply at SHAW'S Publishing Library, Southampton-row.

MR. AUG. KRANTZ, of Berlin, begs to inform his Customers and Friends that he is now in London for a short time, and will be happy to receive their commands. He is now able to execute any orders for Collections and single specimens of Minerals, Fossils, &c.—Address Mr. A. KRANTZ, 45, Frith-street, Soho, London.

September 14, 1849.

PLESIOSAURUS DOLICHODEIRUS.—Mr. TENNANT, Geologist, 149, Strand, London, can supply Collectors with a fine Cast of this interesting Fossil,—the original is described by Dr. Buckland in his 'Bridgewater Treatise,' and figured in vol. 2, plate 17. The Cast is in Plaster, carefully coloured and mounted in wood frame, 6 feet 3 inches long, by 3 feet 4 inches wide, price 4l. Mr. Tennant has Casts of various Teeth and Bones of the Iguanodon, Hylæosaurus, &c. described by Dr. Mantell, Prof. Owen, and others; Geological Models in Wood, constructed by T. Sopwith, Esq. F.R.S., to illustrate the nature of Stratification; Faults, Veins, &c. in sets, from 2l. to 5l.; also Elementary Collections for Students in Geology, from Two to Fifty Guineas each.

GEOLOGICAL TRANSACTIONS.—Mr. TENNANT, Geologist, 149, Strand, London, can supply the last five volumes, in twelve parts, being Volumes 3, 4, 5, 6 and 7, for 5l., published at 17l. They contain numerous Plates of Fossils, Sections, and Maps to illustrate the original memoirs by the following distinguished Geologists,—Buckland, Buddle, Clarke, Cliff, Darwin, De la Beche, Egerton, Fitton, Hamilton, Lonsdale, Lyell, Mantell, Murchison, Owen, Sedgwick, Strickland, Taylor, Weaver and others.—Mr. T. has a few copies of Mr. Hawkins's 'Book of the Great Sea Dragons,' with thirty beautiful plates, 21 inches long by 14 wide, of the remains of the Ichthyosauri and Plesiosauri from the Lias, price 31s., published at 90s.

TO PUBLIC LECTURERS.—The Committee for conducting the City Public Lectures are ready to RECEIVE SUBJECTS and TERMS for LECTURES to be delivered during the ensuing season.—Secretaries of Literary and Scientific Institutions are respectfully solicited to favour the Committee with Prospectuses of Lectures.

JOSEPH PLOWMAN, Secretary.

City Reading-room, Oxford.

DISSOLVING VIEWS, Apparatus for Public and Private Exhibitions, Painting, Chromatrope, and Moveable Figures for the same; Oxy-Hydrogen and Table Microscope; Air Pump; Electrical and Electro-Magnetic Machine; Working Models of Steam Engines, &c. Illustrated Catalogue, with prices attached to each article, and likewise Estimates of different sets of Apparatus. 1s.; per post, 1s. 3d.—C. W. COLLINS, Royal Polytechnic Institution, London.

FIRST-RATE BUSINESS, CAMBRIDGE.

TO BE DISPOSED OF, in consequence of the death of Mr. J. J. DEIGHTON, and with the consent of the Executor, his share of the BOOKSELLING, PUBLISHING, and STATIONERY BUSINESS in the firm of J. & J. J. DEIGHTON, Cambridge. This business, which has been carried on by the same family for considerably more than half a century, has peculiar advantages connected with it. The probable amount of capital required would be about 4,000*l.*—For particulars apply personally to Mr. J. DEIGHTON, Trinity-street, Cambridge.

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TO PUBLISHERS and MAGAZINE PROPRIETORS.—A GENTLEMAN, who has been connected with periodical literature, and a contributor to the leading Magazines, is desirous of meeting with an ENGAGEMENT as EDITOR of a respectable MONTHLY MAGAZINE, to the conduct and general management of which he would be prepared to devote the whole of his time and attention. The highest references as to character and general abilities can be furnished.—Address, with proposals as to terms, &c., by letter pre-paid, to "EDITOR," care of Mr. HAYWARD, Newspaper and Advertising Agent, Exchange, Bristol.

VENTNOR, in the ISLE of WIGHT, so justly esteemed for the mildness of its climate, as the gem of the Undercliff and the Madeira of England,—having been free from sickness during the present prevailing epidemic and being replete with every accommodation, offers a desirable WINTER retreat for Invalids and others.—Particulars of Furnished Houses and Apartments to be Let for the season may be obtained, free of charge, on application to C. H. BULL, House Agent, VENTNOR, Isle of Wight.

BADEN-BADEN.—The delightful valley of Baden is at length restored to its pleasures. This watering place, already so renowned, presents at this moment the most animated appearance,—the villas, and even the cottages, scarcely afford sufficient accommodation for the families of distinction who congregate from all parts of Europe. The Railway, which unites Baden with France and Switzerland, brings a numerous and select company, who assemble here to enjoy the many and varied charms of a quiet and tranquil life.

The Fêtes, the Concerts, and the Balls have never been better attended. The beautiful valley of Lichtenthal is covered with numerous parties of equestrians and splendid equipages, and the sounds of music enliven the promenade, and add their attractions to the scene.

An amusement, unknown in the other watering places of Germany, has been created by the erection of an Amphitheatre.

To complete this elegant programme, it is only necessary to add that preparations are being made, as in former years, for Hunting Parties, on a scale of magnificence which will form an appropriate termination to this brilliant season.

THE EDINBURGH REVIEW, No. CLXXXII.—ADVERTISEMENTS intended for insertion are requested to be forwarded to the Publishers before Thursday, the 27th, and BILLS by Saturday, the 29th inst.

London: Longman & Co. 39, Paternoster-row.

WESTMINSTER and FOREIGN QUARTERLY REVIEW.—BILLS and ADVERTISEMENTS for the forthcoming Number should be sent, on or before the 25th inst., to GEO. LUXFORD, Publisher, 1, Whitefriars-street, Fleet-street.

THE QUARTERLY REVIEW, No. CLXX.—ADVERTISEMENTS for the forthcoming Number must be forwarded to the Publisher by the 24th, and BILLS for insertion by the 26th instant.

John Murray, Albemarle-street.

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Public Library, Conduit-street.

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THE BEST MODE for the Establishment and Supply of Reading and Book Societies in Town and Country, is that detailed in a little work recently published, entitled 'Hints for the Formation of Reading and Book Societies,' which is sent gratis and post free to orders inclosing two stamps, addressed, Messrs. SAUNDERS & OTLEY, Publishers, Conduit-street.

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THE GARDENERS' CHRONICLE AND AGRICULTURAL GAZETTE

(The HORTICULTURAL PART edited by PROF. LINDLEY)

Of September 8, contains Articles on

Adder skins, by Mr. J. Wighton
Alkali works, *v.* vegetation
Agriculture and politics
Asparagus, to suit
Auchness Farm
Box feeding
Caird's (Mr.) farm
Calendar, horticultural
Calendar, agricultural
Canaries, to breed, by Mr. John Pell
Carts, Cumberland
Cattle, to box feed
Cholera
Cow disease
Cuttings, use of leaves on
Dahlias, seedling
Dentifrice
Diseases of plants
Drainage Company
Drainage Act
Entomological Society
Farm, scheme for cultivating 11 acres of
Farm prospects
Farming, amateur, in 1776
Farmers, English *v.* foreign
Flint soup
Flower growers, London
Fork, garden
Horticultural Society
Land, to measure, by Mr. John Smith
Land, steep, *v.* level
Land-agents, qualifications of
Lettuce-root aphis
Lime water *v.* mildew, by Mr. G. Spary
Martindale's Analysis of Soils, rev.
Melons, flavour of
Mildew, cure for
Moths
Newington's (Dr.) machines
Norwich, horse-judging at
Phanerogams, fertilization of
Pig disease
Pit, winter
Plants, new
Plants, specimen
Plants, odours of
Plants, diseases of
Plants, churchyard
Pleroma vimineum, diseased leaves of, by the Rev. M. J. Berkeley
Potatoes, Martin's plan of saving
Potato traversed by Couch
Potato crop, by Hardy & Son
Potato crop, Irish
Rose catalogues
Snails, to kill
Soup, flint
Temperature
Teeth, camphor ill for
Tigridia conchiflora
Vegetation and alkali works
Villa gardening
Weather, the

The Gardeners' Chronicle and Agricultural Gazette contains, in addition to the above, the Covent-garden, Mark-lane, and Smithfield prices, with returns from the Potato, Hop, Hay, and Seed Markets, and *a complete Newspaper, with a condensed account of all the transactions of the week.*

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NOTICE!

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Henry Colburn, Publisher, 13, Great Marlborough-street.

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By HIMSELF.

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With an APPENDIX.

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LONDON, SATURDAY, SEPTEMBER 15, 1849.

REVIEWS

Conversations with Goethe in the Latter Years of his Life—[*Gespräche mit Goethe, &c.*] By John Peter Eckermann. Part III. Magdeburg, Heinrichshofen; London, Dulau.

Eckermann's first two volumes on Goethe have been long known and highly valued. They rendered to the memory of the great man of Weimar a service not unlike what Boswell's book did for stout Samuel Johnson's; and with the same effect,—of increasing our regard for the eminent person to whose familiarity we were thus in some measure admitted. The relation of the young literary assistant to the veteran author became by degrees so confidential and kindly, that Eckermann was enabled to record many of his patron's feelings and opinions on matters of deeper biographical interest than belonged to even his gleanings on the topics of art or criticism, which naturally took up the greater part of their conversations. The care with which the most pregnant of these sayings were preserved in notes set down while the impression was still warm is attested less by Eckermann's own declaration than by the freshness with which the very colour and form of the speech of a great genius live in his pages. Nor was it a small part of their merit to have shown us in a modest and engaging manner something of the story and character of the reporter himself. From the glimpses of his life that appeared in the first two volumes enough was seen to account not only for the access he obtained to one, who in his declining years was reserved towards mere strangers, but also for the friendly place he afterwards occupied in Goethe's private circle. Without making a parade of his own remarkable career, Eckermann quietly relates so much of his humble origin, of his early strife with adverse circumstances, and of the means by which he raised himself from a mean and unpromising condition of life in a remote province to the position of a cultivated man of letters in the Athens of Germany, as enhances our interest in his records by the regard we learn to feel for the writer himself. It is no wonder that a book with this double recommendation should have been popular on its first appearance, and have retained this popularity. Of all the works professing to describe Goethe in his latter years in a personal and social aspect—and of these many have appeared since his death—Eckermann's is still justly preferred; as giving the most lively, complete and authentic picture we possess of the veteran poet.

A third part of the Conversations had been promised, and was long expected in vain by lovers of German literature. Various causes have been assigned by report for the delay of eleven years between the appearance of the first and of this concluding portion,—of which rumours however, as the preface to the third volume makes no mention, we think it unnecessary to say more. Eckermann states his own reasons for the slow progress of this last part, to the effect that the conversations here recorded—with the exception of some obtained from another source—were not, like the most of those in the two former volumes, at once noted down in his diary; but had to be caught, as it were, by the echo, from time to time, as his recollection at favourable moments brought vividly back expressions and occurrences which had not been more immediately preserved. Such returns of memory, he justly observes, cannot be commanded; and the conscientious desire, for which we may give Eckermann implicit credit, to repeat no word as Goethe's which did not return to his mind with the very life of the speaker's original utterance, restrained him from advancing the progress of his book by the aid of imperfect reminiscences. Those now given to us, he declares, are such as have been restored to him, at intervals during the last ten years, with a distinctness that left no shade on their accuracy—and, as far as intrinsic evidence can be applied as the test of such an assertion, we see no reason to doubt its substantial truth. Indeed, we greatly mistake the reporter's character, and the nature of his respect for the memory of Goethe, if his own assurance may not be largely trusted in this matter—while it is so far confirmed by the tardy preparation of a book, sure to be well received, which there could have been no difficulty in "getting up" speedily enough, had the author been willing to adopt a summary process of coinage, and utter his own inventions as the relics of a great name.

Still it must be felt that there is a difference in kind as to perfect authenticity between the first and final parts of this memorial—the former chiefly taken, as we have said, from instant impressions, the latter recovered by degrees from occasional revivals of a time long since expired. Yet we must say that the speeches recorded here, compared with those in the two earlier volumes, seem to bear a kindred stamp of originality, and a decided impress of the poet's own mind: and if not Goethe's *ipsissima verba*, are words to which no common mind, none certainly that had not drawn much from his source, could have given birth. With all our liking for Eckermann, we may doubt his capacity to produce *Marte proprio* many of the passages attributed to Goethe in this volume; and, on the whole, must believe that the thoughts, if not the literal expression of the master, are here sufficiently apparent.

These, however, scarcely compose more than a third of the volume. We find Eckermann himself contributing more largely to the discourse than in the previous parts: and the narrative is increased, certainly not to its disadvantage, by accounts of the social occurrences which Eckermann remembers himself to have shared with his patron; amongst which some fresh recollections of country drives in the neighbourhood of Weimar are to us extremely pleasant. Here again there is nothing obtrusive in the representation; and what additional knowledge we gain of Eckermann's character and doings is a welcome complement to his previous self-portraiture of a worthy, modest and ingenious man. But it may be seen that here again the natural process of Time acting upon Memory has been at work; and that at the distance of years, while the express traits of what was heard from the revered voice become fewer, those recollections of the intercourse are most distinctly preserved in which the reporter himself more directly participated.

Besides his own remembrances, Eckermann now publishes some notes made during the period of his own connexion with Goethe, by Soret, a young Genevese; whose office, as French reader to the young princes, frequently brought him into contact with the poet. These have been translated and inserted in the order of their dates; but they do not add much value to the book. The notices of conversation are generally brief;—where express words may have been taken down, the process of a double translation—as Soret wrote in French—has deprived them of all peculiar colour: and the contrast between the tameness of this representation and the life of Eckermann's own reports will confirm the impression that the latter do not unfaithfully repeat the very language of Goethe.

The first two volumes being already known in England, readers will desire rather to taste the fresh matter in the new one than to hear our comments upon it. The specimens we can find room for must be taken as detached fragments, which we can only arrange according to their general colour. We shall begin with the lightest table-talk.—

A young beauty of the Weimar circle being mentioned, one of the company observed that he was on the point of falling in love with her, although her understanding was not of the brightest kind. "Bah!" said Goethe laughing, "as if love had anything to do with the understanding! In a young lady we love quite other things than her intellect. We love in her the beautiful, the youthful, the coquettish, the confiding; her character, her faults, her caprices, and God knows what other unspeakable attractions; but her understanding we do *not* love. We *respect* it, if it be a brilliant one; and by it, too, a girl may gain an infinitely higher value in our eyes. Understanding, also, may be a good thing to keep us in chains when we are in love already. But it is not that which could ever at first inflame us or awaken the passion."

This may be properly followed by a morsel of sly court gossip—which turns up some years later.—

I was one evening, said Goethe, taking a walk in the Palace Gardens with a friend; when we accidentally perceived, at the end of the avenue, two other persons, of our usual circle, who were pacing together, side by side, in quiet conversation. I shall not mention the name of either gentleman or lady—but that will not affect the story. They went on conversing, as I said, and seemed to have nothing particular on their minds—when, all at once, their heads inclined towards each other, and a hearty kiss was mutually given and returned. After this, they pursued their walk as before, and continued their discourse with the utmost sedateness, as if nothing had interrupted it. "Did you see that?" exclaimed my friend in vast amazement, "can I trust my eyes!"—"I saw it, indeed," I answered gravely, "*but I do not believe it!*"

No great man is without his whims: one of Goethe's, an aversion to the wearing spectacles, had been confessed in some published verses. Here is the repetition in prose, half jesting, half in earnest,—as most of such confessions are wont to be. As the habit in question is rife in Germany among scholars and literary men, this must have been an unlucky antipathy for one much visited by the *fahrende Studenten*.—

It may be an eccentricity in me,—he would say on many occasions,—but after all I cannot get the better of it. The instant a stranger enters my room, spectacles on nose, an uncomfortable feeling comes over me which I cannot master. It discomposes me so that it drives away a great part of my charity on the very threshold; and spoils my thoughts to such a degree that any unembarrassed natural developement of what may be in my mind is quite out of the question. It gives me the impression of something uncivil; just as if a stranger were to utter a piece of rudeness as his first compliment. This I feel the more strongly since I declared in print, years ago, how obnoxious [*fatal*] spectacles are to me. When a stranger comes with his spectacles now, I say to myself at once, so! he has not read your last published poems!—and that is of itself a little to his disadvantage—or, if he have read them, then he knows your peculiarity, but pays no regard to it—and that is worse still. The only man that wears spectacles without annoying me is Zelter: in any one else the practice is an abomination to me. I always feel as if I were to be made an object of the strangers' scrutiny, and as though they were resolved to pierce, with their glances thus armed, into my innermost being, and spy out every single little wrinkle of this old face of mine. But while they study to make acquaintance with me in this way, they destroy all fair equality between us; as they hinder me at the same time from taking my compensation by doing the like with them. For what

can I get out of a man into whose eyes I cannot look while his lips are speaking to me, and the mirror of whose soul is veiled by a pair of glasses that dazzle my eyes?

Here is a still more characteristic specimen of the way in which Goethe, in his youthful moods—and such never forsook him to the last — would sometimes try to puzzle his hearers, leaving them in doubt whether he was teaching or mystifying them. The reporter on this occasion is Soret; and it is perhaps the only lively thing he has related. The small criticism of the Genevese, no doubt, had half amused, half vexed, the poet amateur.—

There stood before Goethe's window (in his sitting room) a little statue of Moses, in bronze—a copy of the celebrated original, by Michael Angelo. The arms appeared to me to be too long and robust in proportion to the rest of the body; and of this opinion of mine I made no secret to Goethe.—"But the two heavy tables, with the Ten Commandments," he exclaimed, with animation, "pray do you think it was a mere trifle to bear the weight of those? And, furthermore, do you imagine that Moses, who had to command and to controul an entire host of Jews, could possibly have been contented with a pair of merely commonplace arms?" Goethe laughed, while saying this; so that I could not make out whether I was really mistaken, or whether he were not merely amusing himself with the defence of his artist.

Alas! poor matter-of-fact Monsieur Soret!

From such slight gleanings, the passage to more serious discourse may be smoothed by an anecdote of some literary interest, concerning Schiller. Goethe had been speaking with his usual generosity of poems by an amateur author; but added.—

The only thing to be objected to this, as well as to most of the works of our young ladies and gentlemen, might possibly be that, like trees too full of sap, which throw out a number of parasitical shoots, they have an excess of thoughts and emotions which they are unable to command; so that they can rarely keep within due bounds, or know how to stop in the right place. * * One must be a veteran in the business, he added, laughing, to understand the art of crossing out. In that respect Schiller was eminently great. On one occasion, while he was engaged with the *Musen Almanach*, I have known him cut down a pompous poem, from *two and-twenty* strophes, to *seven;* and in fact, the composition lost nothing by this terrible operation; on the contrary, these seven strophes still preserved all the good and effectual ideas that the two-and-twenty had at first contained.

We will now hear the poet on his own works and opinions. Speaking of the *Book of Chagrin*, in the *West Oestlicher Divan*, he reviews some points of his literary career and of his position towards the public, in a tone of self-consciousness which he, of all men perhaps, was entitled to assume; while the spirit of his remarks on the chapter of praise contains an universal truth, as to the degree in which any great author is really in debt to his admirers.—

In reality they (his readers) were never thoroughly satisfied with me; and would always have had me something else than what it had pleased God to make me. And they were but rarely content, either, with what I produced. After I had been labouring with my whole soul, for days and years, to give the world some pleasure by a new work, it expected that, besides having done this, I should also show myself grateful if it just found the performance tolerable. If they praised me, I was not to accept this in joyful self-consciousness, as a tribute I had deserved; but on the contrary, people expected from me some kind of humble deprecating language, in which I should have proclaimed to the world the utter worthlessness both of my person and of my work. Against that, however, my nature revolted; and I must have been a pitiful rascal (*elender Lump*), had I been willing to dissemble and lie in such a manner. But I was, on the contrary, strong enough to show myself, in entire sincerity, with my real feelings; and, therefore, I was called proud, and am so regarded to this very day. On subjects of religion, in matters of science and politics, in every way and everywhere, I had to fight my way forward; because I would not be a hypocrite, and had the courage to declare myself according to my true convictions.

Another memorable passage, touching on a relation that in its day supplied material for many petty libels, contains an illustration both characteristic and graceful. Zelter, his Berlin friend, on an occasion we have not space to describe, had expressed sympathy with what he had imagined to be the contempt of Goethe for the *profanum vulgus* of Weimar. On first reading this letter,

Goethe looked at me—and we both smiled. "Zelter is a worthy, genuine fellow," he said; "but it befalls even him now and then to misunderstand me not a little, and give a false interpretation to my words." * * On the same evening, Zelter's letter still lay on the table, "It is strange, very strange," said Goethe, "how easily one falls, in the opinion of the public, into a false position. I do not know that I ever offended in any way against the people; but it seems that once for all I must be rated as no friend to the people. In truth, I am no friend to a revolutionary populace, that sets out with plunder, murder and arson, and has nothing but the basest of selfish ends at heart beneath a false pretence of the public weal. I am no more the friend to such people than I am the friend of a Louis the Fifteenth. I hate every revolution by violence,—because by such a process there is to the full as much good destroyed as gained. I hate those who execute,—as I hate those who give the cause for it. But am I on that account no friend to the people? Does any rightly-disposed man think otherwise in this respect than I do? You know how heartily I rejoice over every improvement of which the future offers us any prospect. But, as I have said, everything violent or precipitate is repugnant to my very soul,—*for it is not in harmony with nature.* I am fond of plants; I love the rose, as the most perfect of the flowers which our German nature can give us;—but I am not fool enough to require that my garden-shall present me with roses already, when we have but just reached the end of April. I am content for the present to find their first green leaves springing; to see how one leaf after the other developes the growth of the stem from week to week; I rejoice when in May I discover the bud; and am happy when, at last, June bestows on me the rose herself in all her splendour and fragrance. But let him who cannot wait for the due season betake himself to forcing-houses. Now, they say, too, I am a prince's servant, a prince's slave;—as if that meant something! Whom, then, do I serve?—a Tyrant? a Despot? Do I serve one who lives only for his own pleasures at the people's cost? Such princes and such times, thank God! lie far enough behind us. For more than half a century I have been connected in the closest relations with the Grand Duke,—and for half a century have striven and toiled with him; but I should lie now were I to say I could name one single day on which the Grand Duke had not his thoughts busied with something to be devised and effected for the good of the country; something calculated to better the condition of each individual in it. As for himself personally, what, then, did his princely state give him but a burden and a task? Is his dwelling, or his dress, or his table in any way more sumptuously provided than that of any private man in easy circumstances? Go but to our maritime cities, and there you will find the larder and the cellar of every considerable merchant better filled than his. We shall celebrate next autumn," continued Goethe, "the day from which for fifty years past the Grand Duke has reigned and ruled us. Yet, when I fully reflect upon this same rule of his, what else has it been than an unceasing servitude? What else was it but a service for the attainment of great ends, a service for the weal of his people? If, then, I must perforce be set down as a prince's slave, it is at least my consolation that I am but the slave of one who is himself a slave of the general good!"

We had marked some more pages, interesting like this, from the confessions or self-vindication on other points of a noble mind adverting to illiberal censures. But conditions of space must be obeyed; and these passages, as well as many pregnant observations on his own country and on the literary men and works of France and England, must be left, with Eckermann's sketches of the personal appearance of the Poet in old age, to readers of the original, until this concluding part is translated. Some of the last words of Goethe (they are dated the 11th of March, 1832, and on the 22nd of that month he expired) we cannot omit. They are not only of great biographical interest, as showing the earnestness of those religious views which had already been grandly shadowed in the second part of 'Wilhelm Meister'; but they may be prized also for their own sake, as high and solemn thoughts that have seldom been clothed in more impressive language. They are, in a word, not unworthy to close the records of a great man. Eckermann had expressed various reasons for his disappointment on finding that an English bible he had just bought did not contain the Apocryphal books.—

"I am quite of your opinion," answered Goethe. "Yet there are two distinct points from which the biblical question may be viewed. One is that of a kind of primal religion, that of pure nature and reason; which is of divine origin. This remains evermore the same; and will continue and prevail so long as there exist human beings divinely endowed. But this is for the elect only; and is far too high and noble to be adopted by the common sort. Then there is the ground of a church; which is more human in its conditions. It is apt to err, is changeable, and is even now varying; yet this process of transformation will eternally last,—so long, at least, as human frailty exists. The light of an undimmed Divine revelation is far too pure and dazzling to be suited to poor infirm man, or endurable by him. The church, however, interposes, as a beneficent medium, to soften and to mitigate it, so that all may be relieved, and entire ease be given to many. The Christian church is a vast power, in virtue of the creed attached to her,—that she, as the successor of Christ, is able to give relief from the burden of human sin. And thus the presiding aim of the Christian priesthood is to maintain itself in this power and in this authority, and thereby to secure the edifice of the church. It is therefore less its part to inquire whether this or that biblical writing tends greatly to illuminate the mind, or whether it contains lessons of elevated morals and ennobling humanity,—than to keep in view the importance of the Books of Moses, from the history of the fall and the origin for the necessity of a Redeemer; and, further, of the prophets, from their repeated reference to Him, the expected; as also of the Gospels, as relating his actual appearance on earth and his death on the cross as an expiation of our human sins. You will see from hence that for such aims and tendencies, and weighed by this scale, neither the worthy Tobit, nor the wisdom of Solomon, nor the sentences of Sirach can have any important value. Besides this, in biblical matters, *authentic* and *non-authentic* are very hard questions. What is authentic but the wholly excellent,—that which harmonizes with the purest nature and reason, and which to this day ministers to our highest development? And what is spurious but the absurd, the vague, and the silly; that which bears no fruit, no good fruit, at all events? Were the genuineness of a biblical writing to be decided by the question,—whether the matter delivered to us is true in every letter, one might dispute in certain points the genuineness, even, of the gospels; of which those by Mark and Luke set down not what they had themselves actually seen and experienced, but what they collected from verbal traditions long after the events; and the last, by John, was not written until he was far advanced in years. Nevertheless, I hold all the four gospels to be thoroughly authentic; because all of them are actively pervaded by the reflected light of a majesty, emanating from the person of Christ, which is as divine as anything divine that has ever appeared on this earth. Will any one ask

if it lies in my nature to show to Him a reverent adoration, I answer, yea, thoroughly! Will any one ask if it lies in my nature to hallow the sun, I answer again, yea, thoroughly! For this, also, is a revelation of God; and the mightiest, too, that we children of earth are now permitted to behold. In it I adore the light and the creative power of God,—by which alone we live and move and have our being, and with us all things animated and inanimate. But if any one will ask me if I am inclined to bow down before the bone of a finger of the Apostles Peter or Paul, then I must exclaim, 'Excuse me; and keep aloof with your absurdities!'" * * "We little know," continued Goethe, "how much in all things we owe to Luther and to the Reformation in general. We have become free from the bonds of a spiritual narrowness;—we have been enabled, as a consequence of an advancing culture, to return to the source, and to comprehend the Christian system in its purity;—we have recovered courage to plant a firm foot on God's earth, and to feel the worth of our divinely-gifted human nature. Let intellectual cultivation progress as it may—let the natural sciences grow on as they may in ever widening content and depth—let the spirit of man expand as it will—yet will it never raise itself above the height and moral culture of Christianity, as it glows and shines in the Evangel!" * * The discourse turned to great men who had lived before Christ, amongst the Chinese, Indians, Persians, and Greeks; and how in them the power of God had been not less active than in some of the great Jews of the Old Testament. We fell, too, on the question how it stands with the work of God in great characters of the actual world of to-day. "To hear people talk," said Goethe, "one might be tempted to suppose they must believe that since those old times God had withdrawn himself altogether into repose; and that man is now wholly left in the world to stand on his own footing, and must try how to shape his life for himself, without the Deity and his daily invisible inspirations. In religion and morals, indeed, a certain divine operation is still admitted to take place; but matters of science and the arts are believed to be of the earth merely, and nothing more than the product of purely human energies. But let any one make the attempt, and try, with human will and human powers alone, to produce anything that may deserve to stand by the side of the creations which bear the name of Mozart, Raphael, or Shakspeare! I know right well that these noble three were not the only ones of their kind; and that in all the domains of Art there have wrought unnumbered admirable minds, who may have produced things as perfect as those I have named. But if they were as great as those, then these, too, towered above the common nature of men in an equal degree, and were divinely gifted also even as they were. And on the whole, what is this, and what does it mean? God has certainly in nowise betaken himself to rest after those well-known symbolical six days of creation; but, on the contrary, is still continuously as active as he was at the beginning. To have merely composed this rude mass of a world from its simple elements, and set it rolling on from year to year in the rays of the sun, he would surely have found but a sorry pastime (*hätte ihm sicher wenig Spass gemacht*) had he not formed the plan of founding to his own honour on this material basis a training-ground for the world of spirit. Thus he is, now as ever, still working on in higher natures, in order thereby to raise the inferior to a more consummate growth!"—Goethe became silent.

And on these "great and good words," as Eckermann rightly calls them, we shall gratefully close the pages of no common book.

Extracts from the Registers of the Stationers' Company of Works entered for Publication between the Years 1570 *and* 1587. With Notes and Illustrations by J. Payne Collier. Printed for the Shakespeare Society.

This, the second volume of Mr. Collier's careful 'Extracts,' is the second publication of the Shakespeare Society for the present year; and brings the entries from the Registers down to the year 1587,—about the period when it has been conjectured by his biographers that Shakspeare arrived in London and became a writer for the stage. The volume closes, therefore, at the same period at which Warton's unfinished 'History of English Poetry' unfortunately closed. That Mr. Collier's labours in illustration of English literature may not terminate as suddenly as Warton's will be the wish of all interested in the literary history of Great Britain. We look to his third volume for a rich range of illustration: for, though it might scarcely be expected, after the supposed careful examination given to the Registers by Steevens, Malone, George Chalmers, Douce, Ritson, and others, that any very great discovery will be made,—yet when we remember that Malone had examined the Alleyn papers at Dulwich, and got very little from them, while Mr. Collier as an after-gleaner gathered a plentiful and instructive harvest, we are justified in hoping that a similar success will attend him on this occasion. Steevens, we are informed by Mr. Collier, "did not scruple to put his initials against every entry in the Registers that interested him:"—but we have proof already that the well-known "G. S." of this Puck of commentators was not affixed to every entry which with our enlarged knowledge of the literature of the period is looked upon as interesting.

We shall not trouble our readers with a selection from the "Entries,"—too often singularly barren even for a clerk of the Stationers' Company; but shall take our extracts from Mr. Collier's illustrations. He has again made use of that MS. Ballad Book in his own possession which deserves to find a place hereafter among the MS. treasures in the British Museum:—and has drawn also upon the stores of the late Mr. Heber and those of other well-known and liberal collectors.

On the 6th of August, 1576, occurs the following entry.—

"Ric. Jones. Lycensed unto him a ballat, intituled a walkynge Ladyes now goo we, Some pleasant thinges to viewe and see . . . iiij$^{d.}$ and a copie."

Upon which Mr. Collier observes:—"Can this be the pretty song contained in a MS. belonging to the late Mr. Heber, and sold when his library was dispersed? It has rather a more modern sound than the date of the entry, but it may have been altered in transcription. In MS. Heber it is called

The Invitation.

Walking, ladies, now go we,
Some pleasant things to hear and see.
First, you hear the merry birds
Singing descant without words,
Sitting in the hawthorn tree,
Where they knock it lustilie.

Some are in the air, so high
You might think them of the sky:
These, in deed, you cannot see,
Though they sing so lustilie;
You may hear them for a mile,
And right merry they the while.
* * * *
Walking, ladies, if we go,
We shall see all this and mo.
Come with me; it is the Spring;
Give it thankful welcoming.
Think what pleasure you must miss,
Homekeeping on a day like this."

Under the date 26th of July, 1576, the following entry occurs.—

"Ihon Hunter. Receyved of him for his license to ymprinte a new and pleasant comedie or plaie after the manner of Common Condycions . . . xij$^{d.}$"

"This entry," says Mr. Collier, "may perhaps fix the date of the first appearance of the 'pleasant comedy called Common Conditions':—a point not hitherto ascertained, because the only known copy (in the Library of the Duke of Devonshire) is without the title-page. * * We are tempted to quote the following Sea song, because we believe it to be the very earliest of the kind in print in our language. It opens, as was not unusual, with the burden:—

Lustely, lustely, lustely let us saile forth,
The winde trim doth serve us, it blowes from the north.
All thinges we have ready, and nothing we want
To furnish our ship that rideth hereby;
Victuals and weapons, thei be nothing skant,
Like worthie mariners ourselves we will trie.
Lustely, lustely, &c.

Her flagges be new trimmed, set flaunting alofte,
Our ship for swift swimmyng, oh, she doeth excell:
Wee feare no enemies, we have escaped them ofte;
Of all ships that swimmeth she beareth the bell.
Lustely, lustely, &c.

And here is a maister excelleth in skill,
And our maisters mate he is not to seeke;
And here is a boteswaine will do his good will,
And here is a ship boye, we never had leeke.
Lustely, lustely, &c.

If fortune then faile not, and our next voiage prove,
Wee will returne merely, and make good cheere,
And holde all together, as friends linkt in love;
The cannes shal be filled with wine, ale, and beere.
Lustely, lustely, &c.

This (hitherto neglected) song our readers will perhaps agree with us in believing to be not only the earliest naval ballad that we have, but one of the best before Dibdin's time. Our earliest drinking song, 'Jolly good ale and old,' is found in the comedy of 'Gammer Gurton's Needle,' and is still one of the best of what editors call the convivial or bacchanalian kind.

An entry about Sir Francis Drake has afforded Mr. Collier the opportunity of printing a spirited ballad, "intended for the amusement and information of the lower orders, and relating solely to the events of 1586, when Drake, Carlisle, Frobisher, Winter, and Knowles combined in an expedition against St. Jago, St. Domingo, Carthagena, &c. It was contained in the comparatively modern MS. formerly belonging to Mr. Heber, into which it had, no doubt, been copied from a broadside."—

The Deeds of Drake and his Companions.

Awake, each Muse, awake!
Not one I need, but all
To sing of Francis Drake
And his companions tall.
One Muse may chance do well,
Where little is to tell;
But nine are all too few
To tell what he did do,
His friends and soldiers all.

Drake was made generall
By sea and eke by land,
And Christopher Carlell
Did next unto him stand.
Brave Winter, too, was there,
And Captain Fourbisher,
And Knowles, and many mo,
Did all together go,
To lend a helping hand.

Three thousand Volunteers
Were number'd with the rest,
And sailors, as appears,
To guide them to the West,
To quell the Spaniard's pride,
Which could not be denied;
But which could not be seene
By our most noble Queene,
And stomach'd with the best.

In more than twenty ships
They sailed from the port,
In speed they did eclipse,
And took St. Jago's fort:
It was a glorious day.
Before they came away,
The day of our Queen's birth,
They kept with joy and mirth
In well beseeming sort.

Santo Domingo next
They took and also spoiled.
The Spaniard he was vext
To be so easy foiled.
No force could them resist;
They did as they did list.
The Spaniards bought the town,
And paid the ducats down
For which they long had toiled

From thence to Carthagene
They carried victory;
Upon the Spanish main
That city rich doth lye.
They took it by assault:
The Spaniards were in fault;
But they could not oppose
The valour of such foes,
And yeelded presently.

To Terra Florida
They did direct their course,
And ever by the way
They prov'd their skill and force.
With fear the Spaniards shook
While all their towns they took.
For barrels of bright gold
The towns our English sold,
And shewd therefore remorse.

And now they have returnd
To Plymouth back once more,
And glory they have earnd
Enough to put in store.
Our Queen with great delight
Beheld the joyous sight,
And thank'd them every one
For what they thus had done
By sea, and on the shore.

Now, welcome all and some,
Now welcome to our isle,
For Francis Drake is come
To London with Carlisle;
And many more with him
That ventur'd life and limb,
And fighting side by side
Did quell the Spaniard's pride,
To cause our Queen to smile.

The following MS. poem on the death of Walter Devereux, Earl of Essex,—father to Queen Elizabeth's favourite,—Mr. Collier has given in illustration of an entry relating to his death.—

The Death of Devoreux.

Lament, lament, for he is dead
Who servde his prince most faythfully.
Lament eche subject, and the head
Of this our realme of Brittany.
Our queene hath lost a souldier true,
Her subjectes lost a noble frend:
Oft for his queene his sworde he drewe,
And for her subjectes bloud did spend.

I speak of noble Essex, who
Bore the high title of an earle:
His name great Walter Devoroux,
The kingdomes grent and precious pearle:
The brightest jewell of the Crowne,
The noblest of the noble peeres,
Who livde and dyed in high renowne,
Whose fame shall last beyond all yeares.

His services what neede I tell,
Sith they are truely knowne to all?
His souldier's life beginning well,
His glorie spreading to his fall:
Worthy descendant of a race
Famous of olde for worthy deedes,
You saw his lineage in his face,
For noblenes the noble breeds.

Wales did rejoice her in his birth,
And there a while he spent his youth,
But all the land soone saw his worth,
As all the land now Joyns in ruth.
A souldier and a Courtier both,
He servde his queene in everie kinde,
And conquering rebels of the north,
When priests had made them wood and blinde.

Our queenes rewardes on him did fall;
She made him of the Garter Knyght,
And earle of Essex over all:
He seemde to challenge these by right.
To Ireland he then was sent,
The kernes and rebels to convince,
Whilst victorie flewe whereas he went,
And rebelles made to owne their prince.

But what can last? not brasse nor stone,
Not adamant, though harder still.
Can men of fleshe and blood and bone
Hope to indure when nothing will?
As men are borne, so must they dye:
Such is the Almighty's great decree,
And nobles yeeld, albeit so high,
To death's fell stroke, like you and mee.

So yeelded Essex, but too soone;
His youth not yet, I weene, was past:
In very midst of manly noone
His daye of life was overcast.
Too harde the taske he under tooke,
And to[o] severe his toile and paine.
Death, when the Earle was weakest, strooke:
The coward striketh not in vaine.

The rebelles stout alone rejoyce
To finde that now their greatest foe
Hath neither harte, nor heate, nor voyce,
But in the earth is laide full lowe.
Whilst we for this the more lament
His earlie losse, as we have seene;
And more than all the discontent
And sorowe of our gracious Queene.

Lament with me, lament, then, all
The heavie losse that we sustaine:
When such mischaunces doe befall,
Our onely ease is to complaine.
Our queene hath lost a souldier brave,
The Court hath seen a courtier's ende,
Nobilitie now filles a grave;
The common weale hath lost a frend.

The MS. copy of this ballad—which reminds us in many places of Burns's 'Dirge for the Earl of Glencairn'—is not as old, Mr. Collier tells us, as the event which it commemorates by perhaps fifty or sixty years.

Of Mr. Collier's manner of illustrating his extracts the following is a good example.—

"6° *Aprilis*, [1583-4].

"Tho. cadman. Yt is graunted unto him that if he can gett the commedie of 'Sappho' lawfully alowed unto him, Then none of this companie shall Interrupt him to enjoye yt, vj^{d}."

"[This is the entry of the first edition of Lily's comedy of 'Sappho and Phao,' which was printed in 1584, without the name of the author, and has been attributed to other dramatists. The right was considered doubtful, notwithstanding the collected edition of his plays in 1632, including 'Sappho and Phao.' If the Register had been looked at, there could never have been any doubt on the point, for in the margin the name of 'Lyllye' is distinctly written, though in a hand different from the body of the memorandum.]"

An entry relating to a tract by Robert Greene, has enabled Mr. Collier to produce some new information about that still famous prose writer and poet.—

"We may take this opportunity of introducing to the notice of the reader an extraordinary rare publication connected with Robert Greene, the existence of which has only hitherto been known, but which nobody appears to have seen. A copy of it now lies before us, with the following title:—'Greene's Newes both from Heaven and Hell. Prohibited the first for writing of Bookes, and banished out of the last for displaying of Connycatchers. Commended to the Presse By B. R.—At London, Printed Anno Domini 1593,' 4to. The initials B. R. are unquestionably those of Barnabe Rich, who took advantage of the notorious event of Greene's recent death, in order to produce a prose tract, which would be sure to sell, on account of the popularity of the person to whom, and to whose pamphlets, it referred. Rich was much in Ireland, and perhaps 'Greene's Newes both from Heaven and Hell' was printed there, for neither printer nor publisher is mentioned; and the dedication is 'To the renowned Gregory Coolle, &c., at his chaste Chamber at Dublyne in Irelande.' The work is full of personal matter relating to Greene, and of allusions to his various works, showing decisively, among other points, that Greene was the author of the tracts against coney-catching imputed to him, the correctness of which imputation has, however, been, not unreasonably, disputed. It opens thus singularly:—'Be not dismaied (my good freends) that a deade man should acquaint you with newes; for it is I, I *per se* I, Robert Greene, in *Artibus Magister*, he that was wont to solicit your minds with many pleasant conceits, and to fit your fancies, at the least every quarter of the yere, with strange and quaint devises, best beseeming the season, and most answerable to your pleasures.' From hence Greene proceeds, in the person of his own Ghost who appeared to B. R., to give an account of himself, with the mention of many of his celebrated productions. The Rev. Mr. Dyce never met with this tract, and, excepting the one in our hands, we know not where a copy of it is to be found: it is not in any public library, nor in any private collection that we have had the good fortune to examine."

Did our leisure serve, we could enrich our columns with many curious notices from Mr. Collier's pages relating to Breton, Gascoigne, Sir Edward Dyer, Elderton, Hakluyt, Munday, Tarlton, and even Spenser and Camden:—but we must withstand the temptation, and close the volume so far as our own columns are concerned.

Report from the Select Committee on Public Libraries; together with the Proceedings of the Committee, Minutes of Evidence, and Appendix.

[Concluding Notice.]

THERE is no portion of the valuable evidence afforded to the Public Libraries Committee by M. Guizot and M. Van de Weyer of greater import and moment to literary men and readers in general than those which describe the well-weighed liberality of the French and Belgian Governments in aid of important publications connected with Literature, Science and the Fine Arts. The Chambers in France, as our readers will recollect from our last week's extracts, voted every year a sum varying from 20,000*l.* to 25,000*l.* "for the purpose of giving to the Government the power of subscribing for a certain number of copies to every important public work which was published,—and the copies of those works were distributed among the provincial libraries." The undertaking of works of importance was thus encouraged by the Government; while the public received back the money voted in the shape of the copies distributed to the provinces. A similar practice prevails in Belgium. There, says M. Van de Weyer, "there are very few publications for which the Government does not subscribe for a number of copies, and it is by doing so that, on one side, they encourage the progress of literature, and on the other are enabled to send some copies to the libraries in the provinces—encouraging by so doing the establishment of public libraries."

We could wish that a similar practice prevailed in England; and that the Government of this country would copy, not merely France and Belgium, but the example given to them still nearer home. The East India Company (the merchant-princes of Leadenhall Street) invariably subscribe for *forty copies* of every work of importance connected with the East. What has been the Chancellor of the Exchequer's subscription in aid (to quote only recent examples) of Mr. Layard's admirable work on the marbles of Nineveh, or of Mr. Dennis's on 'Etruria'? Nothing! Mr. Layard, however, in no way discouraged, is pursuing his labours principally at his own expense—whilst Mr. Dennis is obliged for the means of existence to accept a paltry secretaryship in the scorching climate of Demerara. Something of the right kind has, nevertheless, been done. Pensions are given for past services,—Mr. Petrie's 'Historical Collections' were printed at the expense of the Treasury—Flamsteed's 'Observations' at the expense of the Admiralty—Mr. Cannon's 'Records of the Services of the several Regiments of the British Army' at the expense of the War Office. But our 'Record Publications' are a sad monument of mismanagement—and our quarto 'State Papers' (unsaleable from their costly price) lie covered with dust in the back cellars of Albemarle Street.

Individual enterprise has done nearly all in this country: and it is high time that the Government should do something. Books should be encouraged by Government purchases in aid of public libraries,—and public libraries should be erected in every town and village and hamlet in the three kingdoms. If authors were so stimulated to useful undertakings, we should have many desirable works published that now never come to light,—while the claims on the Pension List would be reduced in number.

The several military libraries in this country have cost within the few years since their creation at least 25,000*l.*, or something like 2,000*l.* a year; and there are additional expenses incurred in purchases made by the Stationery Office, amounting to about 500*l.* a year, in aid of the same excellent institutions. Why should we not have civil as well as military libraries? And why are the records of our several regiments—filling at least 90 volumes—the only records which we are to have at the expense of Government, of class or individual services in this country? Peace has her victories as well as war; and a Life of John Howard would form a nobler contribution to a British Plutarch than a Life of the Marquis of Granby or the Duke of Cumberland. The lesson which it would teach may fairly be set against all the gain from histories of the Coldstream Guards, the Scotch Greys, and the Inniskillen Dragoons.

Our readers are aware that there is a most vexatious delay at the British Museum in

making the new publications acquired under the Act of Parliament and the additional purchases of old books generally accessible to the public. On this point Mr. Weld, the Librarian to the Royal Society, has something to say.—

"How do you keep up your catalogue?—Books coming in one week are invariably added the next week to the catalogue, so that the catalogue is never more than ten days behind.

"Do you consider that the additions to your catalogue are made more rapidly than those at the British Museum?—Decidedly so.

"Would a Fellow of the Royal Society find immediately in your library such a book as Mr. Macaulay's 'History of England'?—Undoubtedly; indeed I may mention, with respect to that question, that many officers of the British Museum apply to us for books that they cannot get at the British Museum.

"Why cannot they get them at the British Museum?—That I cannot answer, but they are not in the catalogue. A very curious instance occurred lately: the *Athenæum*, a journal well known, was asked for by an officer of the British Museum, who was unable to get it at the Museum.

"Perhaps they do not take in the *Athenæum* at the British Museum?—They are bound to have it; it is a published book, and it must be sent to the British Museum.

"You merely mention the fact, but you can give no explanation of it?—I apprehend that the journal I mentioned was not entered in the catalogue at the time it was asked for at the British Museum.

"It was entered in your catalogue?—Yes.

"And all such works would be at once entered in your catalogue?—At once."

Some of the questions put to Mr. Edwards, one of the Assistant-Librarians at the British Museum, had particular reference to this provoking dilatoriness.—

"By what process would Mr. Macaulay's History find itself in the British Museum?—It would be received from the publishers, in virtue of the Copyright Act.

"Do you happen to be aware whether the demand in the Reading Room is considerable for such recent works as that of Mr. Macaulay?—I do know that there has often been great disappointment on the part of readers at not being able to get books of that kind of recent date.

"What do you consider the average time at which a book is entered after its reception into the British Museum?—I fear that many books have been three years in the Museum before they have found their way into the public Catalogue."

In other words, before the public can make use of them: so that Mr. Macaulay's 'History' and Mr. Petrie's 'Materials' will at this rate not be available for more than two years to come. If almanacs are entered at this snail's pace, it will be desirable that 'A British Museum Almanac for the Use of the Readers at that National Institution' be issued, like the Nautical Almanac, at least three years in advance. The last new novel accessible at the Museum must be a stale affair, and the last 'Book of Beauty' a memorial of the past, by the time they are severally catalogued and accessible under the present sleepy system.

All the witnesses examined were not in favour of converting our larger institutions into Lending Libraries:—and it is only fair to give a sample of the evidence on the other side. The Solicitor-General for Scotland (Mr. Maitland) observes:—

"The great defect in the administration of the Advocates' Library, in my opinion, is the extent to which it has been converted into a common circulating library. Apart altogether from the books obtained from Stationers' Hall, the injury to the library has been quite incredible. All the ordinary readable books, for which there is a great demand, are now reduced into a state and condition so bad that it is perfectly disgraceful. The more rare books, which are given out only on the order of the Curators, are in better order. The manuscripts are well preserved; they are only given out on a special order from the Curators; but the great bulk of the library is considered and used as a common circulating library. As the library is the private property of the faculty, it may at first sight appear difficult to find grounds for legislative interference with it. But I must own that the possession of the privilege of Stationers' Hall gives, in my view, a very sufficient ground for such interference. It could never have been the intention of the statute to give that privilege to injure authors and publishers, by immediately converting the books so given to the ordinary purposes of a circulating library. The intention must have been, as it ought to have been, to place them in a library of deposit to be used and consulted to any extent within the walls of the library, but above all, to be preserved. So far, however, from that being the case, you have a return in your hands by Dr. Irving, in which he states that he can give no account of the books that have been obtained from Stationers' Hall, because no account has been preserved. As they come from Stationers' Hall they are boarded, and are immediately placed upon the public tables of the library. In this way not only books of travels or other books of ephemeral literature, but works of the highest value published in this country are immediately converted into common circulating purposes among readers extending to between 400 and 500. I do not think that was the original intention, and I think it is an unfair use of the grant. Besides, it is extremely destructive to the books. They are not preserved as they ought to be, as a gift from Stationers' Hall. They do not remain a public deposit, but are, to a great extent, so destroyed by the mode in which they are used as to be unfit to be deposited in a great public library."

This observation (in which there is a mixture of narrowness and good sense) led to the following questions and replies:—

"Is the circulation confined to the faculty?—Yes, confined to the faculty, and to the Judges of the Court of Session who have been advocates, and paid the subscription at entering: they do not lose the privilege by becoming Judges. That is a varying body, from 400 to 450 individuals; it is about 426 at this moment.

"Then what is the reform you would suggest?—I think the only satisfactory and practical reform in the Advocates' Library would be to put an end to that circulation of the books. How the Legislature can reach it I am not prepared to say; I know a strong opinion prevails among a number of distinguished members of the Scotch bar that that would be a great improvement.

"There being no discretionary power of lending in the librarian?—I would not take the discretionary power from the Curators; occasionllay it may be desirable to print from an ancient manuscript where only one copy may exist, and that in the Advocates' Library. I would not deprive them of the power of lending it out to transcribe for the purpose of publication. And there are books of Scottish history so rare that I should be disposed to deal with them as with the manuscripts; but with those exceptions, I should not be disposed to let the books circulate at all.

"Do you not think, in the case of persons *bonâ fide* engaged in literary pursuits, in reading some books it would be a very great convenience to take the books home and study them at their leisure at their own homes?—I think that is quite inconsistent with the proper preservation of a great library; the parties had much better go to the library; I would make great exertions to give every accommodation, such as is given in the British Museum; that is a better system of preserving the character of a national library, and such, I think, ought to be the character of the Advocates' Library.

"Do you not think it would be better, in the case of persons desiring to consult those rare books, that they should consult them in the library, and adopt one general system by means of sets of books affording instruction to the great mass of the people in towns to constitute a lending library?—I think manuscripts and rare books might be consulted with advantage, and it would be safer that they should be consulted in the Library."

Here we must stop: but we shall not lose sight of the subject,—for it is one of national importance.

OUR LIBRARY TABLE.

Tints from an Amateur's Palette; or, A Few Stray Hues of Thought. By Alfred Jackson.—These little essays deal with great subjects: nothing less than such topics as genius, music, love, poetry, change, conversation, &c. Regarding each of these our author treats us with "a word or two." He is right in this designation: more right than in the second title of his volume, which promises us "hues of *thought*"—since his phrases do not contain an average number of ideas, "stray" or "staid." Mr. Jackson's is at best amateur philosophizing—a ware as little to our liking as amateur theology or amateur music. But he has lighter papers 'Upon Travelling,' 'The Ocean,' 'Our School Days'—showing indications of a smartness and fancy which might lead him to success, supposing them to be carefully cultivated.

Tales of the First French Revolution. Collected by the Author of 'Emilie Wyndham.'—These very attractively make up the thirty-first volume of 'The Parlour Library':—two of them, we believe, having already appeared in more costly works by their translator. Well-executed versions of M. de Vigny's 'Docteur Noir,' and 'Cachet Rouge' are followed by M. Oubliac's 'Limoëlan,' and 'The Soldier's Fortune,' by an anonymous writer. The tales first mentioned remind us once again to remonstrate against the silence of their author. France has not so many high-minded, delicate, or pure romancers as to render us indifferent to the retirement of M. de Vigny.

A Pictorial Guide to Birmingham.—This "concise, historical and descriptive account" of the "great midland metropolis"—embellished with, among other things, a map of the town, and furnishing accounts of its public buildings, institutions and manufactures, and topographical notices of the surrounding localities—is a seasonable publication now when the Meeting of the British Association has taken so many strangers into the town who will probably be in want of such a guide.

Proverbs for the People. By E. L. Magoon.—This American book is not, as its title would probably suggest, a collection of popular proverbs incy of either American or English soil;—but a series of eighteen prosy lay-sermons—we have no better word to describe the contents—on the occult wisdom of the ancient Syrian Proverbs of King Solomon. We have parenthetically indicated their quality: of their manner it is enough to say that they are constructed in the formal and orthodox form of firstly, secondly,—and so on to twelfthly or fifteenthly. One would fancy that such wisdom as "A soft answer turneth away wrath" was not so recondite as to require an hour's laborious explanation from Mr. Magoon.—For ourselves, we confess to a strong dislike for such compounds of inspiration-and-water.

English Repetitions, in Prose and Verse, for the Use of the Senior Classes in Schools; with Introductory Remarks on the Cultivation of Taste in the Young through the Medium of our own Writers. By J. F. Boyes, M.A.—A collection of real extracts from English literature,—the result of original reading by a student of good taste and extensive knowledge of his subject; not a mere hodge-podge from the stores of former collectors. Johnson used to say, "Nobody knows any literature." And so far as general society goes, his saying is almost literally true, even yet, in spite of the so-much vaunted march of mind. A curious illustration of this is, the avidity with which a new quotation is seized and worked. One day, a minister, in his place in Parliament, made use of the couplet—

> Surely the pleasure is as great
> In being cheated as to cheat:—

and straightway it became the property, not only of the gentlemen of the House of Commons to be used upon all occasions at their indiscretion, but of every scribbler and declaimer in the kingdom. Could we obtain the statistics of quotation, we should no doubt still find it doing service at least fifty times a week. To all politicians, talkers, or writers who wish to weave the golden threads of other men's discourse into their own plainer textures, these English "Repetitions" will prove valuable,—as many of them

may be almost warranted not to have been quoted before.

Introduction to the Study of the Social Sciences. By the Author of 'Outlines of Social Economy.'—The former work of this writer obtained commendation at our hands for his attempt to map out the outlines of Social Economy:—the present is yet more ambitious in its scope, and its execution is yet more deserving of our approval. Social Science, as this author uses it, is a larger term than Economy. It is made to include the knowledge of all those means by which men are enabled to employ their powers—physical, intellectual, and moral—so as to produce the greatest amount of well-being to the social body. This, the sense in which Auguste Comte employs the term, includes all other sciences: it is the numeration of the series,—the point towards which they all converge. Other sciences teach man how to extend his powers—how to render them more productive of the materials of well-being: the science commonly called Economy teaches the laws by which production and conservation of these materials are regulated. Social Science applies the knowledge gained by experience to the higher purposes of life. Economy deals with materials—and its chief lesson is one on the value of *saving* of accumulations. Social Science deals with morals—and it looks to the end more than to the means. Its chief tributary streams may be said to be moral science, political science, legal science, and economical science. Such is the definition here given:—and we see no reason to quarrel with it. In the illustrations chosen, a few points are raised which we should have to explain and modify somewhat if entering deeply into the question: such as, the propriety of unlimited accumulations of capital in single hands,—a principle which our law has formally condemned. But these are few in number:—and in so young a department of knowledge there must of necessity be many things still open to discussion. The book is a very valuable acquisition to the school library.

The History of Scotland. By the Rev. Thomas Thomson.—An unpretending but useful volume, compiled from the ordinary authorities, for the use of schools. So far as we have examined it, it seems to be written with care and spirit—and in a manner calculated to incite attention to historical studies.

Analysis and Summary of Herodotus.—This analysis is intended to assist, not to supersede, the careful reading of the original. It is more sparing in notes than might have been desired; but the recent work of Mr. Dawson Turner supplies nearly all that the student can require in the way of explanation or illustration of the text. The author of this 'Analysis' has had a humbler but not less useful a task to perform—namely, to methodize the rich and gossiping discourse of the father of history. This he has done with care and skill:—marking off what belongs to the main story, and is necessary to its understanding, from matters of digression which have an interest of their own apart from the course of events. Thus the reader may glance at the main features of the history in their natural order, or go through the full narrative at his discretion. The heads of each paragraph are also given in a larger type. The advantages of these arrangements are obvious. In addition to this plan of mapping out the general contents of the historian's text, there are—an introductory outline of the history and geography,—a synchronitical table of the chief events arranged in chronological order after Bähr, Larcher, and Gaisford,—a table of weights, measures, distances, &c. from Dahlmann, Hussey, and Smith,—and much other information of great importance to the student.

The English Reader: a Collection of Extracts in Prose and Verse from the best English Writers, peculiarly adapted for Reading and Recitation. By John C. Steen.—A collection of the usual passages, lyrical, dramatic and prosaic; with nothing in matter or manner to distinguish it from the thousand other compilations for the purposes and practices of declamation—except the one fact of its being an issue from the press of Hindostan. The gentlemen who compile these books seem to have no knowledge of the living literature of the time.

Outlines of General Knowledge.—*Outlines of English History.* By Henry Ince, M.A.—These little books are not undeserving of the popularity which they seem to have obtained. Both are full of information.—The first is a little confusedly put together perhaps—but where so much is to be crammed into a space so small there is no wonder in this. The 'Outlines of English History' contains the substance of more knowledge of the social progress, manners and customs of our ancestors than many works of far larger pretensions.

"Ormond!" an Inaugural Address delivered to the Directors and Members of the Harrogate Mechanics' Institute. By G. Linnæus Banks.—This address is said to be published by special request. We can believe it. The request must have been *very* special to induce such an indiscretion. There is little reason to fancy that such a medley of rant and roar would be likely to come into *general* request, even in a small provincial town like Harrogate. What Mr. Banks means by his "mission" we know not; but if—as from this discourse seems likely—he imagines it is, to fall into the apostle-of-the-future line of business, he has wholly mistaken it. Before a man seizes the public tribune and announces himself as a teacher of others, he should learn to speak common sense and not to violate the grammar of his country's language. Mr. G. Linnæus Banks has both these necessary arts yet to acquire.

Political and Social Economy. By John Hill Burton.—One of a series of "books for the people" issued by the Messrs. Chambers,—conceived in the true spirit of the Scotch economists.

Pauperism: Is it the Effect of a Law of Nature, or of Human Laws and Customs which are in Opposition to Nature?—A great subject—and not unworthily treated. In this question directly or indirectly is bound up all the ultra ideas of social regeneration now armed and militant in so many parts of Europe. The writer is duly impressed with the gravity of his subject, and he brings to its investigation a calm and sober spirit. The remedy which he proposes as the means to the extinguishment of pauperism may be stated in a phrase—Free Trade in Land. In regard to property he proposes a universal *laisser-faire* as to its accumulation or division. He thinks that if let alone, it would follow the law of nature and fall into the conditions which are most compatible with growth and social prosperity. This proposal, of course, implies the abolition of the present laws of entail and primogeniture—and with them a caste of hereditary nobles. It is no part of our function to enter into the merits of a scheme like this—till it is history. Enough that we indicate the leading idea.

The Earth's Antiquity in Harmony with the Mosaic Record of Creation. By James Gray, M.D.—On the theory of this book we venture no opinion,—lying, as it does, beyond the zone within which we undertake to be critical. We are at liberty, however, to explain that the writer seeks to reconcile the terms of the Hebrew history with the discoveries of modern science,—not by doubting the discoveries, or denying the inferences which they raise,—but by putting a new system of interpretation into use. In fact, instead of the old plan of interpreting Nature by Revelation, he proposes to interpret Revelation by Nature. There is no doubt but that this process will always lead to "harmony:"—whether it may not also lead beyond that, to "heterodoxy," the competent in such matters will choose to decide.

LIST OF NEW BOOKS.

Archbold's (J. F.) The Bankrupt Law Consolidation Act, 1849, 9s. bds.
Bell's (T.) History of British Reptiles, 2nd ed. 8vo. 12mo. cl.
Bartlett's (Mrs.) Ladies' Guide to Making Paper Flowers, sq. 1s. swd.
Campbell's New Testament and Christian Praise, 18mo. 4s. roan.
Christian Praise for the Disciples of Christ, 18mo. 2s. 6d. roan.
Child's Guide to Duty and Devotion, by a Lady, 18mo. 1s. cl.
Child's (Mrs.) Biographies of Good Wives, 3rd ed. 12mo. 3s. 6d. cl.
Clarke (Adam) Pourtrayed, by J. Everett, Vol. III. 12mo. 5s. 6d. cl.
Cumming's (Rev. J.) Apocalyptic Sketches, 1st series, 10th ed. 9s. cl.
Dempsey (G.) On the Drainage of Towns, &c. 12mo. 1s. cl.
Frank Forester's Fish and Fishing in the U. S. by H. W. Herbert, 16s.
Gray's (Dr. A.) Genera of Plants of United States, Vol. II. 1l. 11s. 6d.
Groves's (Rev. J.) Greek and English Dictionary, 10th ed. 8vo. 12s. bd.
Harvey's (W. H.) The Seaside Book, 2nd ed. fc. 3s. cl.
Hoskins's (W.) Healthy Homes, new ed. 8vo. 3s. 6d. swd.
Ibbetson's (Capt. L. L. B.) Geology of the Isle of Wight, 8vo. 7s. 6d.
James's (G. P. R.) The Woodman, 2nd ed. 3 vols. royal 12mo. 31s. 6d.
James's J. H.) The Widow Directed, new ed. fc. 2s. 6d. cl.
Kendall's (J.) Manual of the Law of Bankruptcy, 2nd ed. 12mo. 10s. bds.
Kitto's (Dr.) Cyclopædia of Biblical Literature, abridged, 8vo. 1l. 5s. cl.
Livy, Books I. to III. Latin and English, by Rev. A. R. Fausset, 9s.
National Cyclopædia of Useful Knowledge, Vol. VIII. 8vo. 5s. cl.
Pattison's (L. R.) Chapters on Fossil Botany, 12mo. 4s. 6d. cl.
Ollcrenshaw's (J. C.) Sabbath Labour is Seventh Day Slavery, 2s. cl.
Smith's (Rev. J.) Believer's Remembrancer, Morn. 1s. 6d. Even. 1s. 6d.
Smith's (Rev. J.) Messenger of Mercy, 32mo. 1s. 6d. cl.
Smith's (Rev. J.) Book that will suit You, 32mo. 1s. 6d. cl.
Smith's (Rev. J.) Daily Bible Readings, 32mo. 2s. cl.
Smith's (Rev. J.) Manna in the Wilderness, 32mo. 2s. cl.
Tupper's (M. F.) The Crock of Gold, and other Tales, post 8vo. 8s. cl.
Wedding Etiquette, by a Lady, 3rd ed. sq. 6d. swd.

THE LITERARY FUND.

[Second Article.]

The Society has about thirty-three thousand pounds in real and funded property:—an amount which we hold to be excessive as the reserve fund of a benevolent institution necessarily so limited in the number of its applicants. Persons of "genius and learning" are not "so plentiful as blackberries:" yet the Society by its bye-laws has narrowed even the limitations of the Charter,—and declared that no person shall be entitled to relief who is not an "author of some published *work* of approved literary merit;" and "work" is interpreted to mean *book*. Thus, the Spectator, the Tatler, or the Rambler would not have entitled Addison or Steele or Johnson to relief from the Literary Fund unless their several Essays had been collected and *re-published in a volume.* Neither Mackintosh, nor Herschel, nor Brewster, nor any other distinguished writer in our Encyclopædias could by such writing have established a claim: nor could the contributions of Jeffery, Macaulay, or Sydney Smith to the Edinburgh, or of Walter Scott or Southey to the Quarterly, have been received in evidence of learning or genius. Byron was right, it seems—

A Book 's a book although there 's nothing in 't:

for it will at least serve as an introduction to the Committee of the Literary Fund. Without the publication of a formal book a whole life devoted to literature is of no service. Whole volumes of contributions to Encyclopædias, Reviews, Magazines, Newspapers—leading articles in leading Journals that may have startled Europe and influenced its destiny—cannot be received in evidence. We are not speculating on mere logical possibilities: we refer to facts—facts recorded in public advertisements. The following is an extract from one which appeared in this paper of the 12th of August, last year.—

The advertisers are anxious to draw the attention of the benevolent to a literary man in great distress. * * For many years he was a principal contributor to the *New Times*,—and subsequently to *Blackwood's* and *Fraser's Magazines*. Under his literary labours his health broke down. * * Although his contributions to the above serials EQUAL TWENTY-SIX VOLUMES OCTAVO, AN APPLICATION MADE BY HIS FRIENDS TO THE LITERARY FUND WAS UNSUCCESSFUL, BECAUSE HE HAD NOT PUBLISHED A SEPARATE WORK. At sixty-one years of age, with a constitution so broken up by disease as to render him incapable of severe application, and a wife and mother dependent on him for support, he has no alternative but the workhouse, unless the public will step forward and rescue him from his present wretched condition. * * Subscriptions will be received by Dr. Lankester, 22, Old Burlington Street; Rev. J. Kelly, Churton House, Belgrave Road; W. C. Meates, Esq. 43, Chester Square, Pimlico.

There is no mistake here. The facts are vouched for by gentlemen of known character. The unfortunate applicant died shortly after, in a state of destitution and wretchedness which we will not describe, that we may not shock public feeling:—died without receiving one shilling from a Society expressly established for the relief of men of learning and genius, and with a reserve fund of 33,000*l.* to fall back on in case its liberality should by any accident exceed its income!

Let us, however, look to the appropriation of the Funds of the Society, and glean what we can in the way of information from its annual balance sheet. If we cannot there learn anything respecting the *benevolent* appropriations beyond the simple fact that the Committee have made during the past year ——— grants amounting to ———*l.*, we may get some idea of the cost of benevolent management. Here, again, we distinctly state that we have no personal charge to prefer against the members of the Committee. If there be anything reprehensible in the system, the old management must take its share of the blame. We are indifferent as to who are the wrong doers—and desire only to find a remedy and correct an abuse.

We at first proposed to institute a comparison between the expenditure of the Literary Fund and that of the Artists' Benevolent Fund:—salaries with salaries—rent with rent. Both are chartered Societies. But this comparison has been made at the Annual Meetings of the Society—and it was urged in reply that the cases were not analogous; that the Artists' Benevolent Fund is especially devoted to the relief of the widows and children of the subscribers to the Artists' Annuity Fund,—and, therefore, *no previous*

inquiry into the character of the applicant was required. That such an apology or justification should have been put forward, is a proof how difficult it must be to find a better—for, if it have any weight, it is of force only against the constitution of the Committee. It is not to be believed that five-and-twenty gentlemen *properly selected* could have any difficulty in deciding whether an applicant be a man of genius and learning. Should they not be able to fix the exact intellectual position of each applicant, what would it signify? With thirty-three thousand pounds in reserve they need not draw the line very strictly: and it would, we think, be a rare and exceptional case indeed in which one or the other of the five-and-twenty—the learning and genius being admitted—could not of his own knowledge certify that the applicant was in distress. Of course, it is possible to select a committee the members of which should never have heard of such a man—equally possible to imagine applicants of whom no man had ever heard—possible, indeed, to believe (and circumstances warrant the belief) that, with such a committee and a jobber or two co-operating, persons might be relieved who never had existence for books which were never written. In that case scrupulous men might well be startled, and insist on previous and searching inquiry,—and precautions might be taken which could not otherwise be justified. But though inquiry may have been the only practical remedy at the moment, the only true and permanent one was to reform the Committee. However, no matter under what circumstances all these precautions have been taken by the Literary Fund. It has been resolved that no man shall be relieved who has not published a book. Now, that is a fact gross and palpable enough:—in addition, and notwithstanding the secrecy and refined delicacy of which we hear so much, the Committee require "testimonials of two or more respectable persons authenticating the facts" stated by the applicant,—and the letters and testimonials must be left with the Secretary "at least seven days" before the meeting of the Committee. Why, a man could be passed to his parish in half the time—and without the painful exposure of his miseries required by the Committee of a Society that annually trumpets forth the extreme "delicacy and promptitude" with which it administers relief. But enough of such arguments: more than enough, when we add that the average number of persons annually relieved is under forty,—and that of these one-half or two-thirds have been relieved before, and therefore had their claims allowed. Still, as the above objection has been raised, we shall not push our inquiries into the management of the Artists' Benevolent Fund further than to observe, that its annual expenditure for Salaries, Rooms for meeting of the Committee, and the Annual Meeting of the Subscribers is about 60*l.* a year. The Society, we believe, pay their Secretary 50*l.* a year,—amply sufficient for attending and recording the proceedings at some ten or twelve meetings:—and the remaining sum is paid for the use of a room at the Freemasons' Tavern, where the meetings are held.

We will therefore take for comparison the balance sheet of the Artists' *General* Benevolent Fund. This Society is established for the relief of artists *generally*, their widows and children;—as the Literary Fund is for the relief of literary men, their widows and children. Here, so far as we can see, the cases are exactly analogous: and that no accidental circumstance may influence the question, we will give the several expenditures under their respective heads for five years,—from 1844 to 1848. We intended to have given them for seven years,—but the accounts are not included in the annual reports of the Literary Fund for 1842 and 1843.—

Artists' General Benevolent Fund.

1844	55 applicants relieved. Salary, Rooms for meeting of Committee and Subscribers	Charges for	£69	9	0
1845	43 applicants relieved.	Charges, &c.	58	5	0
1846	42	,, ,, ,,	56	12	0
1847	55	,, ,, ,,	56	1	0
1848	54	,, ,, ,,	57	14	0

Thus, the expenditure for salaries, rooms for meetings, &c. of the Artists' General Benevolent Fund is within a trifle the same as that of the Artists' Benevolent Fund,—and *both are under* 60*l.* a-year. Now, let us compare with this the expenditure of the

Literary Fund.

1844	31 applicants relieved. Salary, Rent of Rooms for meeting of Committee and Subscribers	Charges for	£377	17	7
1845	38 applicants relieved.	Charges, &c.	353	10	0
1846	46	,, ,, ,,	384	19	2
1847	38	,, ,, ,,	396	15	5
1848	50	,, ,, ,,	394	16	9

We have in the above comparison confined ourselves to such simple and definite charges as admit neither of mystification nor mistake; and the result is, that the numbers relieved by the Artists' General Benevolent Fund are one-fifth greater, and the cost of its benevolence is under 60*l.*; while the average charges of the Literary Fund is 360*l.*,—more than six times the former amount!

Be it further and emphatically observed that, though the Charter of the Literary Fund distinctly sets forth that "the Committee shall *without delay* take into consideration all applications," that Committee has been accustomed to adjourn for the *four* autumn months,—and it was only on remonstrance at the last general meeting that it consented to meet once a month for nine months, instead of eight; that these meetings generally last about two hours,—say three; that by the Charter there are *three* Honorary Registrars to record its proceedings,—*three* Honorary Treasurers to "superintend the accounts," who "order payment of such money as the Committee shall direct to be paid,"—and *three* Honorary Auditors "to examine the accounts." So that the above enormous charges are for a clerk and a room to meet in! Surely, when the Crown appointed such a staff of honorary officers to a benevolent institution, it assumed that the very light duties imposed would have been cheerfully borne by the benevolent gentlemen who were content to wear the honours of office. We have reason, indeed, to believe that for some years they *were* so executed, with the assistance of a clerk at some 40*l.* a-year salary. But the clerk is grown into a secretary, is become a sort of resident director, is formally present at the meetings of the Committee,—where a Vice-President or a member of Council is not permitted to set foot. In brief, he has superseded the officers, or—has nothing more to do than the 40*l.* a year clerk had of old.

If we pursue our comparison further—if we examine the minutest details of the accounts of these benevolent societies—the result is much the same. Thus—

Artists' General Benevolent Society.

1844	For Printing, Stationery, Postage and Miscellaneous		£30	8	9
1845	,,	,,	24	3	10
1846	,,	,,	30	15	11
1847	,,	,,	50	18	2
1848	,,	,,	29	1	0

Literary Fund.

1844	For Printing, Stationery, Postage and Miscellaneous		£157	9	3
1845	,,	,,	113	6	2
1846	,,	,,	130	14	5
1847	,,	,,	107	10	4
1848	,,	,,	104	1	1

The general results may be thus summed up.—The *average* annual cost for five years of the Artists' General Benevolent Fund for salaries, rent, printing, stationery, postage, and petty disbursements is 90*l.* 17*s.* 10*d.*—while that of the Literary Fund is 504*l.* 2*s.* 10*d.*: making a difference of nearly 3,000*l.* every seven years!

We have omitted all charges open to discussion: such as collector's poundage (a per-centage on the money collected), advertisements, and expenses attending the anniversary dinner (which involve questions of policy and management). We have simply compared the cost in each case of like things—salary with salary, rent with rent, miscellaneous with miscellaneous: and we desire to know how one benevolent institution can justify an expenditure of more than 500*l.* a-year, for the same things and services which another and like benevolent institution procures and gets performed with equal efficiency for less than 100*l.* a year.

If the President, the Vice-Presidents, the members of Council, and the members at large know nothing as to how the benevolent fund is distributed, they now know the cost of distribution:—504*l.* for assisting the committee, with three registrars, three treasurers and three auditors, to draw on an average forty drafts!

We shall say no more at present:—for our own ease and quiet we had better not have said so much. "Old Experience" enables us to foretell the consequences,—and we have but too long shrunk from facing them. If others of weight and influence will take up the cause with a determined resolution to compel a reform, they shall have our support. If, on the contrary, the officers of the Society without the pale of the Committee, and the members at large, be content to shrug their shoulders and cry "How shocking,"—why so be it: our "withers" will be "unwrung"—our conscience clear.

NINETEENTH MEETING OF THE BRITISH ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.

BIRMINGHAM, SEPTEMBER 12.

[*From our own Correspondents.*]

GENERAL COMMITTEE.

THE nineteenth meeting of the members of this Association commenced at Birmingham on Wednesday.

The General Committee held its first meeting on that day at the Free Grammar School,—the Marquis of Northampton in the chair. The usual ordinary business was transacted; and on the motion of Col. Sabine, the Bishop of Manchester was added to the list of Vice-Presidents.

The following Report from the Council was read and adopted.—

Report of the Council to the General Committee.

I. With reference to the subjects referred to the Council by the General Committee assembled at Swansea, the Council have to report—

1st. That they communicated the recommendation of the General Committee, for the continuance of the Magnetical and Meteorological Observatory at Toronto to the 31st of December, 1850, to Lord John Russell, through the President, the Marquis of Northampton. They have the pleasure of stating that the Observatory has been continued.

2nd. Pursuant to the request of the General Committee, the Council have taken into consideration the expediency of inserting in the Rules of the British Association a paragraph to the effect that those gentlemen who have held the office of President of the Association should subsequently be *ex officio* members of the Council; and the Council now recommend that a paragraph to that effect should be inserted in the Rules of the Association.

3rd. The sum of 100*l.* placed by the General Committee at the disposal of the Council for the disbursements connected with the Kew Observatory has sufficed, under Mr. Ronalds's general superintendence, for the maintenance of the Observatory in the past year as a depository for the books and instruments belonging to the Association; and also for the preparation of the self-registering magnetical instruments, on Mr. Ronalds's plan, for the Toronto Colonial Observatory. Mr. Birt has completed the reduction and discussion of the series of electrical observations made at Kew; and Mr. Ronalds has drawn up a Report describing the modifications and improvements which he has introduced in the self-registering apparatus during the last year. Both these Reports will be read to Section A. preparatory to a consideration of any further recommendation which it may appear desirable to make for the continued maintenance of the Observatory. In connexion with this subject, the Council have great pleasure in announcing to the General Committee that Her Majesty's Government, on the joint application of the Marquis of Northampton and Sir John Herschel, have granted to Mr. Ronalds a pecuniary recompense of 250*l.* for the invention of his method of constructing self-registering magnetical and meteorological apparatus. It will be recollected by many members of the General Committee that the subject of self-registering instruments was discussed at the meeting of the British Association at Cambridge, in 1845, upon the application for a grant of money from the funds of the Association to enable Mr. Ronalds to complete an apparatus for that purpose at Kew; and that a recommendation was made on that occasion by the Association to Government—which recommendation was concurred in by the President and Council of the Royal Society—of the expediency of encouraging, by specific pecuniary rewards, the improvement of self-recording magnetical and meteorological apparatus.

As the grant to Mr. Ronalds has been made in consequence of that original recommendation and the favourable reply that was returned to it, and as the apparatus itself has been constructed and its successful operation shown at the Observatory of the Association, of which Mr. Ronalds is the Honorary Superintendent, the Council have deemed it proper to make this formal, and as they are sure acceptable, announcement of the favourable reception which has been given to the application on Mr. Ronalds's behalf; but they are glad, at the same time, to take the opportunity of expressing the satisfaction with which they have learned that the ingenious invention of Mr. Brooke, for similar purposes, has also received a pecuniary recompense from the Government.

II. The Council regret that they are still unable to announce the publication either of Professor Edward Forbes's Researches in the Ægean Sea, or of the Mountjoy Observations, for which purposes grants of public money have been sanctioned by Her Majesty's Government at the recommendation of the British Association.

III. The Council have added the following names to the list of Corresponding Members of the British Association—

Professor Plücker, of Bonn.
Dr. Siljeström, of Stockholm.
Prof. H. D. Rogers, of Philadelphia.

IV. Prof. Dove, of Berlin, Corresponding Member of the British Association, having offered to supply the Association with as many copies as might be desired of his Maps of the monthly Isothermal Lines of the Globe, founded upon the Temperature Tables printed in the volume of the Reports of the British Association for 1848, which maps have been partly engraved and partly lithographed at the expense of the Royal Academy of Sciences at Berlin, the Council directed that Prof. Dove should be requested to supply the Association with 500 copies, on the understanding that the Association should pay for the paper and for taking off the impressions; and that the copies thus furnished should be sold, under the direction of the officers, to Members of the Association at cost price, with the translation of a report from Prof. Dove explanatory of the Maps and of the more obvious conclusion deduced from them. The Maps have been completed, but from accidental circumstances the packet containing the first 200 copies, prepared for the Association, has not yet been despatched from Berlin, and cannot be expected to reach England until after the Meeting at Birmingham is over; but copies of the Maps and Report will be forwarded immediately they arrive to Members who may be desirous of purchasing them, and who give their names for that purpose in the Reception Room. The cost of each copy will be 5*s.* for the three Maps.

V. The Council has directed that the following additions should be made to the Regulations, according to which the volumes of the Reports are distributed to the Members:—

1. That members who have formerly paid 5*l.* as a life composition, and shall at any future time pay an additional sum of 5*l.*, shall be entitled to receive (gratis) the volumes of the Transactions which shall be published after the date of such additional payments.

2. That Members shall have the opportunity of purchasing any of the already published volumes of the Association of which more than 100 copies remain, at half the price at which the volumes were issued to the public.

VI. The Council have great pleasure in submitting to the General Committee the following list of invitations from which the General Committee will have to select the place of meeting of the Association in 1850.

a. Invitations received at Swansea by the General Committee, and which stood over after the selection of Birmingham, 1849:—

From Ipswich, for 1849,—signed by the high sheriff, the Bishop of Norwich and eighty gentlemen of the eastern counties.
From Bath, for 1850,—signed by the Mayor.
From Derby,—for 1850.

b. Invitations received since the Swansea Meeting and communicated to the Council:—

From Edinburgh, for 1850,—from the Lord Provost, Magistrates and Council—from the Senatus Academicus, and from the Royal Society of Edinburgh.
From Belfast for 1850 or 1851—from the Town Council—the Royal Academical Institution—the Natural History and Philosophical Society, and from the Harbour Commissioners.
From Manchester, for 1852,—from the Royal Institution—the Geological Society—the Natural History Society—the School of Design, and the Mechanics' Institution.
From Hull, for an early meeting—from the Literary and Philosophical Institution.

VII. The Council have received and submit to the General Committee the following letter from Lieut.-Col. Sabine.—

"*To the President and Council of the British Association.*

"Gentlemen,—I beg leave to acquaint you that it is my intention, at the meeting of the Association at Birmingham, to resign into the hands of the General Committee the office of General Secretary, with which I have been honoured, by annual re-election, for ten successive years.

"I have formed this determination, not from any occurrence which has rendered me less willing than heretofore to undertake the duties and responsibilities of that office, or to make the sacrifice of time, convenience, and of other interests which it requires; nor from a fear that the kindness and indulgence with which my endeavours to discharge its duties have been regarded by the General Committee, by the Council, and by the members of the Association generally, is in any danger of being exhausted; but from the opinion which I entertain that, as a general principle, the disadvantages of such offices being held by the same individual for several years outweigh the advantages,—and that in my own particular case it is safer to act on the general principle than to fancy myself an exception to it.

"I am aware that in Societies in which, as in the British Association, the Presidency is held but for a single year, it may be desirable that the next principal executive officer should be more permanent than when the Presidency is held for a longer period. But the office of General Secretary of the British Association for the Advancement of Science is one which confers honour and distinction on the individual who holds it, not only in Britain, but in all countries where science is enjoyed or its advancement desired; and as such it may justly be regarded as an object of reasonable ambition. When the meeting at Birmingham shall have concluded, I shall have completed a cycle of ten years, and I consider that the time will then be fully arrived when, with propriety as regards myself, and with a due consideration of the interests of others, and pre-eminently those of the Association itself, I may resign the trust with which I have been honoured into the hands from which I received it.

"I have thought it my duty to give you this early intimation of my intention, as it will probably be considered right that the recommendation of my successor should proceed from the Council.—I have, &c.

"EDWARD SABINE."

The Treasurer's Report is as follows.—

THE GENERAL TREASURER'S ACCOUNT,
From 8th of August, 1848 (at Swansea), to the 12th of September, 1849 (at Birmingham).

RECEIPTS.

	£.	s.	d.
Life Compositions at Swansea	30	0	0
Annual Subscriptions, ditto and since	150	0	0
Associates' ditto	376	0	0
Ladies' Tickets ditto	197	0	0
Book Compositions	6	0	0
Dividends on Stock	116	10	1
Sale of Stock (1,000*l.* Three per Cent. Consols.)	917	9	2
From Sale of Publications:—			
Of the 2nd volume £0 7 2			
" 3rd " 1 3 0			
" 4th " 1 4 4			
" 5th " 0 15 2			
" 6th " 2 2 11			
" 7th " 2 6 0			
" 8th " 3 0 4			
" 9th " 1 18 0			
" 10th " 3 7 6			
" 11th " 1 19 11			
" 12th " 3 0 9			
" 13th " 5 12 0			
" 14th " 5 4 0			
" 15th " 15 10 0			
" 16th " 80 0 0			
" 17th " 9 6 0			
British Association Catalogue of Stars 23 1 10			
Lalande's ditto 9 8 2			
Lacaille's ditto 1 16 5			
Lithograph Signatures 0 15 0			
	168	3	6
	£1,961	2	9

	£.	s.	d.
Balance brought on from last account	9	7	10

PAYMENTS.

For sundry Printing, Advertising, Expenses of the Meeting at Swansea, and sundry Disbursements made by the General and Local Treasurers				287	1	9
Printing, &c. the 16th vol. (17th Report)				644	6	8
Salaries—Assistant General Secretary and Accountant, 18 months				300	0	0
Paid by order of Committees on account of Grants for Scientific Purposes:—						
Electrical Observations at Kew	£50	0	0			
Vitality of Seeds	5	8	1			
Acid on the Growth of Plants	5	0	0			
Registration of Periodical Phenomena	10	0	0			
Bills on account of Anemometrical Observations	13	9	0			
				83	17	1
Maintaining the Establishment at Kew Observatory:—						
Balance of Grant of 1847	20	15	7			
Part of Grant of 1848	55	6	10			
				76	2	5
Balance in the Bankers' hands	335	13	4			
Ditto in General and Local Treasurers' hands	24	13	8			
				360	7	0
				£1,961	2	9

The officers of the various Sections were appointed, and the Meeting adjourned.

GENERAL MEETING.

The Association held its first General Meeting at the Town Hall, at eight o'clock in the evening. The attendance was tolerably numerous. The chair was taken by the retiring President, the Marquis of Northampton. His Lordship in the course of a brief address expressed his satisfaction that the Association again held its meeting in Birmingham; and having warmly eulogized the President elect for the ability and talent which he had displayed in his scientific researches, introduced that gentleman to the meeting, and retired.

The Rev. T. ROMNEY ROBINSON proceeded to address the Meeting as follows.—

The President's Address.

If I thought only of myself, the embarrassment which, in taking the place to which you have called me, I feel would be much increased by the way in which my predecessor has spoken of me. Hitherto it has been filled by men illustrious in the senate or the field, heads of the Societies which are the centres of our scientific life, and lodestars of the great institutions which have been through many ages the guides of our nation in the progress of intellectual cultivation. Against such men if I weigh myself, I know how much I must be found wanting. But I trust I may be permitted to regard myself as the type of a humbler but not useless class, for whom this Association was especially devised, and whom it enables to add their tribute to swell the general store. For it is not like the forbidden ground of Romance, a region where heroes only can tread; it is not a mere instrument for collecting into a focus the light of the suns of the intellectual sky. It is rather like those machines which unite the power of many, singly weak, but achieving by the union works which would overtask the strength of the mightiest individual. In one thing only I will venture to take to myself as not unmerited the praise of Lord Northampton. In zeal for the welfare of this Association, in intense interest for the accomplishment of its objects I yield to none; and if these may suffice, I hope I shall not be found unworthy of the trust you repose in me.

Yet, it is no common responsibility with which you have charged me; for this Association is one of the great powers which the altering phases of the world have called into action. Yet a few years since and it could not have existed; and even now some persons are found unable to appreciate its results or understand its purpose. In fact, as the invention of a new machine or process of manufacture is evidence that the old is becoming inadequate to meet the demand which it formerly satisfied, so the feelings which have so successfully called into being our Association here and similar institutions abroad may be regarded as a proof that the existing agencies for the development of scientific knowledge were becoming unequal to their work, and that some higher power must be sought, of energy commensurate to the increasing pressure. Such a power, I think, it is now certain that we afford. It is possible that the form of this great experiment may receive some modification; for example, that it may involve a yet wider application of the mighty principle on which it is based, and become a union not only of persons but of institutions. But we have established beyond doubt that it is a trial in the right direction,—that its principle is the true one, the principle of Association. It may perhaps seem trivial to attach importance to such an assertion; in commercial enterprise, in manufactures, in politics its truth is universally confessed; what then is there new in applying it to science? Nothing, assuredly: in fact science, at least physical science, owes to it almost its very existence, and certainly its progress; and the wonder is that none seem to have fully comprehended this before the founders of the British Association. Observe, that though physical science is of recent birth, physical knowledge has been an object of desire from the very origin of our race. Some have followed it for the sake of the powers which it conferred, and some from the high instinct which reveals to a noble mind the beauty and majesty of such pursuits. In the first glimmer of history, the Astronomy of the Assyrian Magi looms through the darkness; the Geometry which might have been its champion and guide appears in no feeble developement almost in the fabulous antiquity of India. The sepulchres of Etruria and Egypt, the palaces of Nineveh, are giving up to us relics of Art that imply in high perfection the existence of that practical chemistry which was transmitted to us through their Arabian successors. When we look at the marvellous architecture of the middle ages, we find a mastery of the principles of equilibrium and pressure that fills the mind capable of appreciating it with delight beyond even what its surpassing beauty inspires; and we know from the writings of Roger Bacon and Kircher that many facts of experimental physics were current in the cloister. The elements were in existence, but some power was wanting which would combine them into a body and give it life. That power was free, open, honest association. Not intellectual energy or acuteness: the Greeks possessed *that* to an extent never perhaps equalled by any other people,—but they were made incapable of steady union for any purpose by the strange elements of repulsion which seemed inherent in their nature and split their philosophers into sects, their nation into fragments. Elsewhere the separation was still wider; the priestly castes of old, the conventional clergy and masonic societies of more recent times could not coalesce with the rest of the world in the union which I hold to be essential to the growth of science. Therefore, however extensive their knowledge (and they knew more than is generally supposed), it never ripened into general principles; it even became corrupt in the dull stagnation of the mystery in which it was buried,—an instrument of

superstition or imposture, a delusion to its possessors themselves. Astronomy became astrology,—chemistry, alchemy—natural philosophy, magic.—Brewster has shown how the concave mirror brought up an apparition when it would,—and Boutigny has revealed how the repulsive energies of heat ministered to the iniquity of the ordeal. But this period of isolated labour, under which the intellectual domain of our race lay so long fallow, closed at last; and the principle of association revealed itself at one of the epochs of that movement which from time to time stirs up the region of mind as those of geology do the earth at the commencement of some great formation. To borrow from that science an illustration,—the reign of reptiles and monsters gave way to higher beings that soared in the sky; the dominion of Aristotle and the schoolmen disappeared before the age of Copernicus, Kepler, Galileo, and Bacon. From the fifteenth century downwards we find the philosophers of Europe beginning to be worthy of that name. Lovers of knowledge, instead of wrapping up their discoveries in secrecy, using them as a means of influence over the ignorant, or brooding on them as food for haughty self-love, we find them forming a brotherhood of knowledge,—eager to communicate their inventions, applying to each other for instruction, and even disputing among themselves the honour of priority in successful research. If the Florentine Astronomer still envelopes in cipher his observations of Venus and Saturn, it is lest a rival should anticipate what was necessary to perfect his discovery:—while the Monk of Oxford hides in a similar veil his knowledge of gunpowder to exalt himself in the opinion of the world, yet keep his secret. The step in advance was wide, and the onward progress was rapid. It is not merely that each discovery which is thus freely communicated becomes an imperishable addition to the treasury of human knowledge, but it is also a source of others, more numerous as it is more widely diffused,—like a progenesious flower, whose winged seeds would produce little if confined to the neighbourhood of their parent, but bear a thousand-fold when scattered over the land. He who first finds a physical fact or principle often fails to trace it to its full extent: preoccupied by some particular object of research, led by special views, he looks at it with reference to them alone,—and were he sole labourer in the mine, much of its wealth would be lost. It may be too vast to be explored by the power of one mind or within the limits of one life; or it may require aids and appliances which solitary individuals do not possess: to say nothing of what is still more important,—the increase of energy which flows from the sympathy and admiration of a multitude. It is not too much to say that the progress of mankind in science during the two centuries to which I refer far exceeded what had been made during the fifty-six that preceded them; yet the force which impelled it was only partially and imperfectly exerted, and it was soon felt to be capable of far wider application. In this stage of its action the principle of association had operated only on a few mighty spirits whom the sense of kindred pursuits and powers linked together, but from whom their very transcendence kept their humbler fellows at a reverential distance. It was necessary that these also should be included in its bond:—and the age of Societies began. By condensing into a multitude of local centres the activity which was weakened in its diffusion, that privilege of labouring to extend the boundaries of knowledge which had been the glory of a chosen few was extended to a multitude; societies devoted to this object arose in different countries, varying in constitution and form, but all emanating from the same necessity of bringing united exertion to bear on what every passing year showed to be among the noblest objects of human existence. And in this they were eminently successful:—strong in numbers, they were stronger in local concentration; their definite and permanent organization was a source of life and power, and the visible results of their activity were manifest to the world. In many instances they acquired a legal and corporate existence which gave them a hold on general opinion and even on governments; their pecuniary resources and moral weight afforded them the means of researches beyond the reach of ordinary inquirers, and their exclusive character, whether limited by election or by appointment, by making it an object of ambition to belong to them, gained for their pursuits a popularity which their intrinsic worth might not so soon have won. A still more—perhaps their most—important feature is the principle of systematic publication, the value of which has gone on increasing to the present hour, and cannot be overrated. Their Transactions gave to the world not merely casual observations which might otherwise have perished, but elaborate investigations, which probably would never have found a publisher in the ordinary course of trade,—perhaps never have been undertaken had not this channel been open to their authors. It would be foreign to my purpose, even were it possible, to give you an account of the philosophical societies which have flourished, not merely in Europe, but in some of the most distant regions which her sons have reached as colonists or conquerors. A description of them would fill volumes,—a record of their proceedings would be the history of scientific progress for the last two centuries:—I might say of science itself, for, in fact, they began with Newton, and he stands like the sun in Heaven; all is luminous after he has risen, all before darkness or twilight. Yet, while rendering to them the praise which their services have so well deserved, we must not forget that as they were called into existence to meet a state of things which has passed away, so the altered condition of the human mind requires from them now a very different class of function from those which they discharged at first, and that circumstances may occur in which they may retard instead of advancing the progress of knowledge. That which I referred to as an original element of their power is of this number,—their restricted and local character: their very nature requires that they be placed in large towns or cities,—and they cannot multiply their members beyond narrow limits. This was not injurious as long as a single room in a tavern was sufficient to hold all the philosophers of the metropolis, or the means of experiment and instruction were scarcely accessible out of its precincts. It is far otherwise now,—when we count more thousands, and those, too, of higher standard in the ranks of science, than units could be reckoned at the beginning of last century, and when every day adds to their number. No possible extension of the great Societies can meet this, even were they disposed to make it,—which I believe they are not. On the contrary, there is among them a tendency to limit their admissions to men of high fame and proved attainments,—and thus, in some degree, form an Aristocracy of Science. What, then, is to become of the rest?—are they to form provincial societies similarly organized? This, it seems to me, is but a retrograde step; a violation of the great principle to which we owe our advance,—a breaking-up into fragments of the energy which every effort should be made to associate into one mighty unity; and however valuable such Societies are as auxiliaries, unless it be found possible to link them by some principle of federation unto our great body without interfering with their self-government and independence, I feel that much of the good which they are capable of effecting must be lost. Secondly, the increasing vastness of the field which we have to cultivate surpasses the powers of any single body of labourers. Look, for instance, at the most illustrious of all, the Royal Society. At first, as we see from its *Transactions*, it was a mere collector of detached facts and observations, and for them took even a wider range than is attempted by all our Sections; it collected, too, with little discrimination,—in that dawning of information it was not always possible to distinguish a pebble from a pearl. It soon, however, became fastidious; for it reached the point when it became more important to class and interpret than to collect,—and the latter part of its office became subordinate to the other. By degrees, as its accumulating duties began to surpass its powers, we find dissatisfaction appearing, and complaints that particular branches of science are neglected to favour others not so important. At last, the necessity of a division of work becomes apparent; a society splits off to devote itself to Geology,—another to Astronomy,—others to various branches of Natural History,—while the parent, like Trembley's hydra, is more active and powerful than before this division. That this process has increased our knowledge a hundred-fold will not be disputed by any who have watched its progress during the last thirty years; and yet it can scarcely be denied that, besides the chance of exciting hostile feelings between rival Societies, it is open to another objection. The different branches of science cannot well be isolated,—each depends on many others. Geology presses into its service not merely its special subject, but also the Geometry of Hopkins, the Botany of Lindley, and the Zoography of Owen and Agassiz. Astronomy must not only track the unseen with Adams and Leverrier, or fathom the abysses of the sky with Herschel and Rosse,—it must also visit the workshops of the machinist with Airy and Struve. And so of the rest,—they cannot be disunited; and therefore it is evident that some system must be found which, while it leaves unfettered the whole special organization of each Society, shall yet combine their exertions, not merely with each other but also with the great and ever increasing multitude of fellow-labourers beyond their precincts. Therefore it was not merely a happy thought of the good and wise men who were the founders of the British Association which led to its existence; this, or something equivalent was a necessary result of the expansion of that principle whose course I have been tracing,—and which must, ere long, have found some other developement had they not turned it in this direction. It leaves untouched all that was previously available, and merely adds what experience had shown to be deficient. Thus we do not interfere in any way with any Society; on the contrary, we identify ourselves with them as far as possible. We admit, *as of right*, the members of all chartered Societies that publish Transactions throughout our empire; the officers and councils of philosophical institutions, and all their members who are recommended by those councils; and our governing power, or General Committee, is almost entirely derived from the same source,—it is chiefly composed of "members who have printed papers in the Transactions of any philosophical society, or of delegates from such societies or philosophical institutions." We withdraw nothing from their Transactions,—our Reports are of a totally different character; we, on the contrary, assist them,—for many of the most valuable communications which those publications contain in latter years have originated in the proceedings of our Sections. Yet, though we have so much in common with them, it would be a gross error to confound us with them, or to imagine that any increase of their activity or any change in their management could supersede our office. Not the least important part of it refers to persons entirely unconnected with them, persons who have struggled after knowledge in difficulty and obscurity, whose diffidence would shrink from the distinction belonging to such connection,—or even who, without any scientific acquirements, have yet a reverence for them, a perception of their worth. Such we can count by thousands; and every one of them, I am confident, has been profited by the influence which we have exerted on his mind. We have gone still further, and admitted ladies as Associates;—exciting the surprise and perhaps scorn of those who think women fit only for household cares or showy accomplishments: and we have done well,—for without referring to Mrs. Somerville, Mrs. Marcet, or others whom I would name were they not present, I have myself known some whose proficiency in several of our departments might have put many an F.R.S. to shame, who were not to be surpassed in all the graces of their sex and were perfect in all the relations of domestic life. Man cannot ascend in the scale of intellectual power unless woman rises with him. Another advantage which we possess above stationary societies is, our mobility;—we can pursue our labours wherever much is to be learnt or many are to be taught. From the Universities, the seats of abstract science, we have ranged to the mighty emporia of Great Britain—to the treasure-houses of its mineral and metallurgic wealth—to the marvellous palaces of its industrial art; and at every step of our progress even the most highly gifted and richly stored among us have learned new facts, seen opening before them new lines of thought, and met new men. It is a glorious discipline,—the very one which Homer attributes to the wisest of his heroes: πολλων ανθρωπων ιδεν αστεα και νοον εγνω. And let us hope, that, in the expressive imagery of the New Atlantis, we also may be "dowry men" and "mer-

chants of light;"—that they whose seats become the marts of our intellectual commerce may receive in it their share of the illumination which we seek; and that by imparting to them new ideas—by correcting error—by opening to them more fully the laws which rule those elemental powers that serve them in works of microscopic beauty or giant might—we may endow them with gifts which shall both increase the reward of their own industry and enterprise, and augment the prosperity and glory of our country.

Our Association has been tried during eighteen years, and with a success which has exceeded by far what its most ardent friends had ventured to anticipate. It would of course be unreasonable to expect that its career should be at all times equally brilliant, or that an institution whose roots spread into every part of the realm and every order of its people can be free from the fluctuations by which their prosperity is ruffled. It must also be borne in mind, that if we adhere, as I trust we ever shall do, to our rule of assembling wherever we are called by the interests of Science, we must occasionally visit remote and unattractive localities, where the difficulty of access and the want of accommodation will discourage many from attending. But yet we can truly assert, that in *each* of these eighteen years—and assuredly this nineteenth will be no exception—it has added largely to our knowledge, and in no respect fallen short of the objects contemplated by its founders. These were, as stated to the original meeting at York, "to promote the intercourse of the cultivators of science with each other, and with foreign philosophers,"—"to give a stronger impulse and more systematic direction to scientific inquiry,"—"to obtain a greater degree of national attention to the objects of science, and a removal of the disadvantages which impede its progress." Let me request your attention for a few moments respecting each of these. The first of them may perhaps be undervalued by some, or rated merely as an intellectual luxury. Even at that low estimate it is above price; but it is of far higher import. If to visit the field of some high deed—to stand before the sepulchre of the illustrious dead—can fill the mind with lofty aspirations and lift it to noblest emprize, how much more shall it kindle in the actual presence of one of those great beings who are raised up by our Heavenly Father to be the lights of our race. Who could stand before Bessel without feeling how genius is exalted by industry! What a lesson of truth and decision was written on the brow of Dalton! But our close intercourse with each other is still more precious from its tendency to check some evil elements of our nature. For instance, the bitter disputations and petty hostility which have too often disgraced the records of science, and made its followers contemptible. The most irritable man must feel less disposed to apply violent language or attribute unworthy motives to one whom he has met in kindly intercourse, and whose character he has appreciated, than when he encounters a perfect stranger in the arena of the Press; or if he have offended, how many opportunities of atonement and reconciliation are offered by a re-union like this. Accordingly, this fault has nearly disappeared; and when traces of it occur, it is only in persons who have not fully entered into the spirit of our Association. Nor is it less powerful to avert a still greater danger—the greatest, in fact, which besets our pursuits—that of self-esteem. The true philosopher does not incur it: he knows too well the proportion between his ignorance and his knowledge; but if there be any who, from being the wonder of a limited circle, or from exaggerating the difficulty of his own attainments, is disposed to exalt himself above his peers, let him visit us, and I will answer for his cure. There is not a man on earth who could try the experiment without finding superiors in some of our departments, and scarcely any who would not find an equal in that of which he is vain. As to our foreign visitors, I need not take the trouble of proving what you all feel: the attracting them to our shores—the having the opportunity of knowing such men as Arago and Oersted, Ritter, Encke or Struve, Bache or Henry—of strengthening by the ties of friendship that brotherhood of science to which I have already referred as of such importance,—that alone would be worth an Association to obtain it. Even on this, the first night of our meeting, we are honoured by several distinguished guests. On another occasion I shall express to them our acknowledgment of the honour with which their presence graces us; but now shall refer only to one—the Chevalier Bunsen—in answer to any who may suppose that an attachment to any of the various branches of science in which he is so highly gifted unfit a man for the most energetic discharge of the active duties of public life. In the second object—"To give a stronger impulse and more systematic direction to scientific inquiry"—we have not been less successful. The very excitement connected with our meetings is itself such an impulse, and a most powerful one. Those of our members who have long been known as the chief ornaments of our great philosophical Societies—devoted to science, and rich in its triumphs—feel it as fully now as when first they joined us. At each new occurrence they seem to find a renovation of enthusiasm—a flow of hope, an increase of resolution among us—which send them with fresh strength to resume their labours; and will be present to them in the hours of despondency and gloom which at times cloud even the firmest spirits, like a beam of light. Nor is our spell less potent on those yet untried in the race, who come forward to communicate the first fruits of their research,—the truth which has rewarded their solitary toil. To such, the approbation, the kind advice, the affectionate warning of their more renowned companions, is like a horoscope that stamps the future course of life, more powerful even than the applause of the multitude who rejoice at the success of one unknown and are encouraged by it to similar exertion. But still more precious is the excitement of plunging into this mighty flow of intellect to one whose lot is, like mine, cast remote from the resorts of science,—few or none near him to understand or value his pursuits,—nothing but his own fixity of resolve to disperse the listlessness which thus gathers on the mind and clogs its wing. To him you are as an oasis to the travellers in the Desert, whose palms and fountains make him forget the waste which he has left, and store him for another journey with the means of life. But we not only give this impulse, we also guide it, and, by guiding it, sustain and increase its strength, as well as by removing the difficulties which resist it. A small part of what we have thus accomplished you find in the volumes which we have published; the most important, as I already stated, is to be found in the Transactions of various Societies or in separate works. Let me select a few instances, for rapid notice, as time will fail for more. To begin with the science to which I myself am specially devoted,—Astronomy: it has been above all others patronized by nations and individuals; in our own country a Society of high fame and influence has been established for its advancement, and yet it has remained for us to render it services of no common order, which I may be permitted to explain in some detail. In it, as in many other of the physical sciences, the observation of facts is merely the crude ore, which must be sorted and sifted and passed through the furnace to make it yield the metal which we seek. The mere task of making the observations is generally a pleasure, but it is far otherwise with the subsequent process. The arithmetical operations which it requires demand much more time and involve much more labour,—that, too, rather intellectual, and involving at every step liabilities to error. Take a simple instance: you have determined with minute precision the apparent place of a star in the sky,—if you stop then, you have done nothing. The place you have obtained is not the true one, the atmosphere has bent the line of sight; while the light travels down your telescope you and it have been moving, and the sky-marks by which you map the star are themselves disturbed by various and complicated motions. For all these you must allow; but to do so requires, on an average, even in the most improved method of modern times, the writing of 400 figures and the performance of 50 arithmetical operations. But the numbers themselves employed are the result of other complicated operations; nearly half are constant for the same star, but an equal number have relation to the sun and moon, and therefore vary from day to day. Were these also to be calculated it would add an equal amount of work. But even this is insufficient, for we must compare what we thus obtain with the results of former astronomers; and this also cannot be done without bringing them together by the same arithmetic talisman; so that were the whole to be performed by the one calculator, I have found that, however expert he may be, he must expend an hour at least in obtaining each result. Now, from most of this drudgery in the case of more than 8,000 stars, he is relieved by the Catalogue which the Association has given to the world. It contains for each the constants already noticed; and gives the prompt and easy means of making the comparison,—so easy that probably before its epoch 1850 is past, every one of those places will have been verified in the sky. Such an undertaking could have been effected only by such a power as ours, which could at once engage the services of such men as Baily, Herschel, Stratford, and their fellow-labourers, and devote to the inferior part of the work an expenditure exceeding 2,000*l*. In fact had we done nothing else, I say fearlessly that this work alone would have secured us an enduring claim on the gratitude of science. Let me here remark, that there are many other departments in which we could render most important service by the mere collection of the constants that belong to them: as we have done in this case and in that of terrestrial magnetism. Constants are the framework of knowledge, the concentration of power; they belong peculiarly to our domain, and were marked out as such long since; but though unfortunately this work was not executed by that powerful mind to whom we intrusted it, I hope the subject will not be forgotten. I might tell you of the theory of the tides, which Laplace might well style "the most thorny of problems," but of the greatest interest to a nation "whose march is o'er the mountain wave, whose home is on the deep." I might tell you of light thrown on it by observations obtained by our influence, reduced at our expense, and unravelled by one worthy of going beyond the steps of Newton and Bernouilli. To the same philosopher we owe the execution of another important task,—the determination of the plane which marks the level of the sea unvarying with the changes of the tide; a precious gift, as but for it in a few years the absolute levels of our great national surveys would have become a delusion. In Ireland, for example, they referred to the low-water of spring tides; a mark which could not be recovered, as it varies both with time and place. I know not whether this has been yet corrected, but I trust it soon will, as Airy's observations afford the data. It would be tedious to tell you all of this kind that we have effected: and I leave the subject, with a reference to one more example,—the investigation of the motion and nature of waves which we owe to Mr. Scott Russell. These lead by an unexpected line to one far more interesting in a practical view, the resistance and the form of ships. On this subject it appears that valuable information has been collected for us; and it cannot but be matter of regret that materials obtained at so great an expenditure of money (more than 1,000*l*.) of labour and thought should remain unavailable, especially considering the present imperfect condition of naval architecture in reference to science. In many instances we have aided inquiries of inestimable value, though we did not originate them:—as the Fossil Ichthyology of Agassiz, and those of Owen on Fossil Reptiles and Mammalia, which perhaps but for us would never have been completed; and in fine I may mention as an approximative measure of the impulse which we have given to science, that we have expended in this way 15,000*l*. Observe, too, that to this must be added whatever is the pecuniary value of the labours of those members of the Association who have given us their services. *That* all is gratuitous; and if you consider who many of them are, you will find it not easy to assign its price. But I regard as even more conducive to the advancement of science, another part of our labours, peculiarly our own; I mean the Reports which place before us the actual boundaries of our knowledge. Much intellectual energy is wasted in inventing what is already known; much spent on objects comparatively unimportant for want of a due estimate of their worth, many walks untrodden because it is supposed they have been sufficiently explored. For all this a remedy is found in those admirable surveys, so many of which are found in our volumes; they are

as it were a "taking stock" of our intellectual wealth, and tell us how much of it is real, how much doubtful, how much wanting. Whether we consider those which embrace a whole science, as those of Airy on Astronomy or Forbes on Meteorology,—or those which include some one of its divisions, as those of Sabine on Terrestrial Magnetism, Lloyd on Physical Optics, Rennie on Hydraulics, those by the Dean of Ely and his compeers on parts of Mathematical Analysis, or those of Owen and his fellow-labourers in Natural History,—with a multitude of others,—it is scarcely possible to over-estimate their worth. You find there condensed into a few pages the essence of many volumes; the chaos of clashing statements and conflicting opinions reduced to harmony and order; truth winnowed from error, facts from conjecture. They place within the reach of the most secluded student a treasure of certain information which it would be hard for him to obtain even had he access to the libraries and institutions of the metropolis; and even to the mind that is best stored they save time,—and time is power. Such Reports we shall I trust continue to receive in increasing numbers; and as long as we do, we prosper,—for they are the surest index, though not the most showy, of our usefulness.

I have left myself but little space to consider how far we have fulfilled the third of our objects,—"to obtain a greater degree of national attention to the objects of Science." Most assuredly it was needful; for nowhere in the civilized world is less honour paid by a nation to science, though nowhere is national prosperity more connected with its progress, nowhere are heavier penalties paid for its neglect. I do not now refer to the remarkable fact that in Britain only men whose scientific fame fills all Europe were seldom thought worthy of any honorary distinction by their Government. As it relates to themselves, this is of no importance; but it is of deep concern to the honour of this country. The true votary of science loves it for itself: in its possession he has a higher honour, a nobler decoration than man can give. *He* does not require to be bribed to follow it by titles or ribbons,—the baits for meaner spirits, the lure to lower achievements. But he knows that though *he* despises such gauds, those who bestow them hold them precious; and they serve him as a scale by which he finds that great men once placed a Herschel or a Brewster nearly on a level with a third-rate soldier or the annual magistrate of some town that might be honoured with a Royal visit. Nor do I refer to the miserable economy which permitted such men as Ivory and Dalton (to speak only of the dead) to waste, in the drudgery of earning a precarious subsistence, the years, the powers, the hopes which could have borne light into the remotest and darkest recesses of the realms of inquiry; though it does contrast painfully with the munificent provision which republican France and despotic Russia heap on such men when they can find them. Both these spring from the same root;—the gross ignorance in this province of the intellect which up to the beginning of this Association, and long afterwards, prevailed in the land. The industrial classes of our countrymen were wont to rely in their pursuits on the unenlightened dexterity and empirical success which resulted from experience, and to scoff at the idea of learning anything useful from a mere theorist; those whom wealth and independence permitted to choose seldom sought employment or pleasure in this unfashionable region,—their education, though the best then current, having given them very little cognizance of what it might contain. And to ascend still higher, even to the executive and legislative bodies, they "cared still less for science;" the tension of political life engrossed all their faculties: they disliked philosophers as meddlers or despised them as dreamers. The head of a great military department once said that he *hated* scientific officers! Any one of his engineers might have told him that more money had been wasted and lives lost in that department from sheer ignorance of science than any one could think of without shame and sorrow. The question which I know to have been asked by another in "high places," though milder in expression, was not less scornful—"Of what use is science?" He who asked it ought to have known better. Whatever tends to raise man above low and sensual pursuits,—whatever to lead him from the partial and present to the general and the future,—whatever to exalt in his mind the dominion of order and the supremacy of truth,—that must be useful to the individual, useful to the nation. Even had he been incapable of rising above the gross measure of pecuniary value, he ought to have been able to give a mighty answer to his own inquiry. There is not a single element of our commercial prosperity in which the vivifying power of science might not be felt, in which the loss arising from want of that certainty of action which mere unenlightened practice can never attain, does not reach an amount which, if stated in figures, would astound the most thoughtless. For instance, the causes which in our great cities hasten the death and debase and embitter the life of so many, have at last been forced by chemists and physiologists on the notice of the public. Look at Dr. Smith's report on the Air and Water of Towns, in this volume; and when we think that the victims of the deadly influences which are there revealed are chiefly found among the people whose industry is the foundation of our greatness,—that every year cut off from the life of each of these is so much subtracted from national wealth,—even were all moral sense or religious feeling dead in us, we must confess that the knowledge which is capable of averting them "is of use." The ships that bear the treasures produced by this industry through the world are lost to a fearful amount,—nearly *three* daily. What are they worth,—ship, cargo, men?—and most of them perish from want of nautical science or from unscientific construction. How many men have been ruined by searching for minerals, when the merest smattering of geology would have dispelled their delusion. On the other hand, the agricultural produce of our islands might be doubled by a more perfect application of the principles of botany and chemistry. The manufacture of iron has been augmented six-fold by the use of the puddling furnace and the hot-blast,—both gifts of theory. How gigantic a result is this, without reference to the increase in the thousand arts of which this immense supply of that most precious of metals is the exponent. The splendid machinery in which we excel the world owes its present perfection to mechanicians who are conspicuous in *our* Sections, to impulses given by philosophers like Willis or Babbage. Nay, the steam-engine itself, your immortal town's-man's great conquest,—that earthly Fate to which now seems to be committed the weaving of the world's destiny,—that itself was a pure induction of science:—and beyond *that* I need not go. But we live in better times; for no statesman now would be so imprudent as to ask such a question, even were there any so unfortunate as to think it,—which I trust there are not. And this change we, the British Association, have in no small degree helped to produce. We have carried far and wide through the land the light which before beamed only from a few scattered points; if our meteor-like presence be short it is also bright,—and as the meteor is remembered when the stationary lamp is unheeded, so I trust that of the tens of thousands who have felt our influence few will forget the impression which it made on them, and fewer fail to feel that this impression ennobled and exalted their understanding. It is evident that science now has a far more powerful hold on public opinion than when we began our course. No other proof is needed of this than the fact that many new branches of it are finding their way into the course of University instruction. Without referring to the recent changes in those of this island, I rejoice to say that in my own—that of Dublin—within the last year Chemistry, Thermotics, Electro-Magnetism, and others, have been made a portion of the under-graduate course; while one of our own valued members has introduced into primary schools a manual of Zoology, of which the spirit is as good as the substance is attractive. But there is another evidence, not less satisfactory in reference to this our third object, and I name it with pleasure,—the prompt and liberal attention which our Government now pays to the requests of the Association. It is true that we have never applied to it except for matters of paramount importance and unquestionable usefulness; but in times past it would have been no easy matter to force a conviction of this on the guardians of the Treasury; and we may therefore feel assured, not only that they personally take an interest in what we bring before them, but also that the whole nation sympathizes with us;—for some of these concessions are of no ordinary magnitude. The completion of the Ordnance survey of Scotland—the enlarging the scale of part, perhaps all, of that of England—and the adding lines of level to that of Ireland after it was apparently completed—are very formidable items in a budget. At our demands the Observatories from which such splendid additions have been made to our knowledge of Magnetism and Meteorology have been established far and wide throughout our dominions:—a precious gift, not only for itself, but for what it has produced. The example was followed, on their usual princely scale, at four stations by the East India Company, (always, be it said, munificent patrons of science,) and still more extensively by Russia—with what success must be fresh in the memory of those who were present at the Magnetic Congress. We obtained the Antarctic Expedition of Ross, so fertile in its geographic fruit—so invaluable for the wide extension which it gave to the domain of terrestrial magnetism. We procured the expenditure of large sums for the reduction of the Greenwich lunar observations, and for publishing the Catalogues of Lacaille and Lalande,—and much more which I need not recite. Yet,—and we well may reckon it a sign of progress,—not a single voice has been raised in opposition to these grants. It seems as if our country recognized in us its scientific representatives,—as if we were like the Saxon prototype of its great council: its Witena-Gemot—its assembly of the Wise.

And may we deserve that name; for let me remind you that science is not necessarily wisdom. To know, is not the sole nor even the highest office of the intellect; and it loses all its glory unless it act in furtherance of the great end of man's life. That end is, as both Reason and Revelation unite in telling us, to acquire the feelings and habits that will lead us to love and seek what is Good in all its forms, and guide us by following its traces to the First Great Cause of all, where only we find it pure and unclouded. If science be cultivated in congruity with this, it is the most precious possession we can have—the most divine endowment. But if it be perverted to minister to any wicked or ignoble purpose—if it even be permitted to take too absolute a hold of the mind, or overshadow that which should be paramount over all, the sense of duty, the perception of right—if it does not increase in us the consciousness of an Almighty and All-beneficent presence,—it lowers instead of raising us in the great scale of existence. This, however, it can never do but by our fault. All its tendencies are heavenward;—every new fact which it reveals is a ray from the origin of Light, which leads us to its source. If any think otherwise, their knowledge is imperfect or their understanding warped or darkened by their passions. The Book of Nature is, like that of Revelation, written by God, and therefore cannot contradict; both we cannot read through all their extent, and therefore should neither wonder nor be alarmed if at times we miss the pages which reconcile any seeming inconsistence. In both, too, we may fail to interpret rightly that which is recorded; but be assured, if we search them in quest of truth alone, each will bear witness to the other,—and physical knowledge, instead of being hostile to religion, will be found its most powerful ally, its most useful servant. Many, I know, think otherwise; and because attempts have occasionally been made to draw from Astronomy, from Geology, from the modes of the growth and formation of animals and plants, arguments against the divine origin of the Sacred Scripture, or even to substitute for the creative will of an intelligent First Cause the blind and casual evolution of some agency of a material system, they would reject their study as fraught with danger. In this I must express my deep conviction that they do injury to that very cause which they think they are serving.

Time will not let me touch further on the cavils and errors in question; and besides they have been often fully answered. I will only say, that I am here surrounded by many matchless in the sciences which are supposed so dangerous, and not less conspicuous for truth and piety. If *they* find no discord between faith and knowledge, why should you or any suppose it to exist? On the contrary, they cannot be well separated. We must know that God is, before we can confess them;—we must

know that He is wise and powerful before we can trust in Him,—that He is good before we can love Him. All these attributes, the study of His works had made known before He gave that more perfect knowledge of himself with which we are blessed. Among the Semitic tribes his names betoken exalted nature and resistless power; among the Hellenic races they denote his wisdom; but that which we inherit from our Northern ancestors denotes his goodness. All these the more perfect researches of modern science bring out in ever-increasing splendour; and I cannot conceive anything that more effectually brings home to the mind the absolute omnipresence of the Deity than high physical knowledge. I fear I have too long trespassed on your patience, yet let me point out to you a few examples. What can fill us with an overwhelming sense of His infinite wisdom like the telescope? As you sound with it the fathomless abyss of stars, till all measure of distances seems to fail and imagination alone gauges the distance; yet even there as here is the same divine harmony of forces, the same perfect conservation of systems, which the being able to trace in the pages of Newton or Laplace makes us feel as if we were more than men. If it is such a triumph of intellect to *trace* this law of the universe, how transcendent must that Greatest over all be in which it, and many like it, have their existence! That instrument tells us that our globe and we are but a speck, the existence of which cannot be perceived beyond our system. Can we then hope that in this immensity of worlds we shall not be overlooked? The microscope will answer. If the telescope lead to one verge of infinity, *it* brings us to the other; and shows us that down in the very twilight of visibility the living points which it discloses are fashioned with the most finished perfection,—that the most marvellous contrivances minister to their preservation and their enjoyment,—that as nothing is too vast for the Creator's control, so nothing is too minute or trifling for His care. At every turn the philosopher meets facts which show that man's Creator is also his Father, —things which seem to contain a special provision for his use and his happiness:—but I will take only two, from their special relation to this very district. Is it possible to consider the properties which distinguish iron from other metals, without a conviction that those qualities were given to it that it might be useful to man, whatever other purposes might be answered by them? That it should be ductile and plastic while influenced by heat, capable of being welded, and yet by a slight chemical change capable of adamantine hardness, —and that the metal which alone possesses properties so precious should be the most abundant of all,—must seem, as it is, a miracle of bounty. And not less marvellous is the prescient kindness which stored up in your coal-fields the exuberant vegetation of the ancient world, under circumstances which preserved this precious magazine of wealth and power, not merely till He had placed on earth beings who would use it, but even to a late period of *their* existence, lest the element that was to develope to the utmost their civilization and energy might be wasted or abused. But I must conclude with this summary of all which I would wish to impress on your minds—that, the more we know His works the nearer we are to Him. Such knowledge pleases Him; it is bright and holy, it is our purest happiness here, and will assuredly follow us into another life if rightly sought in this. May He guide us in its pursuit; and in particular, may this meeting which I have attempted to open in His name, be successful and prosperous,—so that in future years they who follow me in this high office may refer to it as one to be remembered with unmixed satisfaction!

The EARL of HARROWBY moved a vote of thanks to the learned President for the ability which he had displayed in his Address,—especially as having rendered the subject on which he discoursed most popular as well as profitable.

The BISHOP of OXFORD, in seconding the vote, urged his auditory to bear in mind that men might be humble without being narrow-minded, and religious without being ignorant.

Prof. ROBINSON having acknowledged the compliment, the meeting adjourned.

THURSDAY.

Business began this morning in all the Sections. In the course of the day Captain Carte exhibited experiments of his method of saving life in cases of Shipwreck by means of rockets. In the afternoon the members of the Association visited the Botanical Gardens:—and in the evening the Town Hall was open for promenade and conversation.

SECTION A.—MATHEMATICAL AND PHYSICAL SCIENCE.

President—Mr. W. HOPKINS, F.R.S.
Vice-Presidents—Rev. E. H. GIFFORD, Sir W. S. HARRIS, Mr. J. C. ADAMS, The DEAN of ELY.
Secretaries—Prof. STEVELLY, Messrs. G. G. STOKES, W. R. WILLS.
Committee—Lord Adare, Capt. Sir E. Belcher, Mr. C. Brooke, Sir D. Brewster, Mr. Birt, Rev. Prof. Chevallier, Dr. Evans, Mr. T. W. Gray, Prof. Hodgkinson, Mr. J. P. Joule, Rev. J. King, Dr. Lee, Rev. Dr. Robinson, Mr. F. Osler, Prof. Phillips, Rev. Prof. Powell, Mr. F. Ronalds, Col. Sabine, Col. Sykes, Prof. Wilson, Lord Wrottesley.

The President on taking the chair briefly stated the object of the Association and the usual mode of working the Sections.

Mr. RONALDS handed in his annual report 'On the Kew Observatory,' from which it appeared that the observations have, from the deficiency of applicable funds, been discontinued since the meeting in 1848; but a sum having been then voted for completing certain experiments in progress and another sum for the reduction and discussion of the series of electric observations which commenced in August 1843 and terminated in 1848, the last year's work has been principally devoted to these objects; and it was deemed that good service has been rendered to the modes of magnetic investigation by this employment of the Observatory. The report proceeds to give an account, as usual, of the state of the establishment, including a complete inventory of the contents of the building. Then follows Mr. Birt's discussion of the electrical observations,—occupying a much too large part of the volume to be read, and therefore left for Mr. Birt to report afterwards in substance. A summary specification of the experiments of the year was given, viz.:—1. On the management of the light admitted into Mr. Ronalds's camera by suppressing his usual condensing lenses and bringing the index of the magnet nearer to the lamp, by which means the time required for producing an efficient image on the paper was materially diminished. An improvement on Count Rumford's polyflame lamp was useful for heightening the brilliancy of the flame itself. 2. Experiments intended to determine the comparative advantages of a slit in a shield and the index which had been hitherto used. The slit was found far preferable in the case of large and sudden excursions,—such as those occurring in Canada. 3. On the comparative advantages of the Daguerreotype and Talbotype processes. The former was found for all these uses preferable, confirming Col. Sabine's anticipations. 4. Several experiments, more or less successful, on modes of copying the impression of the mercury on the plate,—in which assistance was derived from Mr. Malone. 5. Experiments of etching, either by the mezzotinto or dry-point method, on the daguerreotype plate itself with a view to the circulation of the original observations, the plate remaining serviceable for a few more mercurial impressions. 6. Experiments suggested by Dr. Lloyd for procuring on the plate the same kind of zero line for measuring ordinates as Mr. Ronalds had from the first procured upon paper, &c. 7. Experiments for the construction of an instrument for measuring ordinates of magnetic and other curves from the above-mentioned zero line, or in other instances. 8. Experiments for the improvement of daguerreotype apparatus for the process of cleaning, polishing, and coating plates used for the purposes of these observations, with some other experiments of less consequence. The volume, further, contains the full details, illustrated with five plates, of the apparatus, resulting in part from the foregoing series of experiments, and sent by Col. Sabine to the Toronto Observatory for immediate use. An advantage of this arrangement is, that no *hygrometric* expansion or contraction can have sensible effect on the required results. Mr. Ronalds's correspondence on the subjects of electricity and magnetism seems to have had beneficial results. In the last place is presented, as usual, a list of proposals for new experiments at Kew, extending to twelve heads,—one of the most urgent of which Mr. Ronalds considers to be the prosecution of experiments commenced at the Observatory in 1845, and suspended for want of funds, on the important subject of *frequency of atmospheric electricity, a subject unaccountably neglected since the observations of Beccaria, at Turin, in the middle of the last century*, and one which seems to Mr. Ronalds to grow in importance with the growth of our chemical and magnetical information. Others of these proposals embrace a course of inquiry in magnetism, electricity, and various meteorological phenomena, all requiring only a sufficient observatory staff to be beneficially carried out.

'Report on the Discussion of the Electrical Observations at Kew,' by W. R. BIRT.—The author stated that 15,170 observations of atmospheric electricity, made during a period of five years, contributed to the deduction of the results detailed in the report. Of these, 14,515 were positive and 655 negative. The positive observations had furnished the data for determining the ordinates of the diurnal and annual curves of atmospheric electricity,—especially during the three years, 1845, 1846 and 1847, to which 10,176 observations contributed. The result of the discussion with reference to the diurnal curve is as follows: —From the mean of the three years at each observation hour,—viz. every even hour, Greenwich mean time, throughout the day and night—it appeared that the tension of atmospheric electricity is at a minimum at 2 o'clock in the morning; from this hour a gradual rise takes place until 6 A.M., after which hour the tension rises rapidly, the value at 8 A.M. being nearly double of that at 6 A.M.; the increase is then more gradual until 10 A.M., the epoch of the first or forenoon maximum; from this hour the tension gradually declines until 4 P.M., when its value is but slightly above the value at 8 A.M. This second minimum the author terms the *diurnal* minimum, as distinguishing it from the *nocturnal* at 2 A.M. After this the tension rapidly increases until 8 P.M.; and after a slight rise to 10 P.M.—the epoch of the principal or evening maximum—the upward course of the tension is completed. The evening maximum is rather considerably elevated above the forenoon maximum at 10 A.M. Between the hours 10 P.M. and midnight the tension declines to nearly the value of the nocturnal minimum. In treating of the annual period the author remarked that the lowest tensions are exhibited in June and August,—the tension of July being rather *above* that of either of the before-named months. During September a small rise occurs, which is increased in October; the augmentation becomes more rapid from November to January and then receives a check,—the February increment being less than either of those of December and January. In February the maximum is attained; it is succeeded in March by a very rapid diminution of tension, which continues through April and May,—the decrements becoming less in value until June, the month presenting the lowest tension. In connexion with this part of the report, the author solicited attention to the close connexion which appears to exist between the electric tension and the humidity of the atmosphere; the records of the Observatory at Greenwich furnishing the means of comparing the two elements. With respect to the diurnal period, the author also infers that the higher tensions exhibited by the electrometers are more or less connected with the humidity of the atmosphere,—especially the moisture enveloping the collecting lanthorn. With the view of illustrating this point, he divided the entire series of observations into two sets,—one of high, the other of low tensions, as well as specifying in each division the summer and winter observations,—and found that the high tensions in the winter materially influenced the results deduced from *all* the observations in the winter, and those again materially influenced the results appertaining to the entire year. The correspondence between these results and those of the discussion of the annual period tended greatly to confirm his inference that the positive tensions, especially those of a high value, are more or less due to the humidity present in the atmosphere. The discussion of the observations at sunrise and sunset, 3,367, illustrates to a great extent the annual period. As these observations extend over a period of five years, the curves are more regular than that deduced from the observations of three years. In accordance with the results having reference to the diurnal period, the sunset curve is found to be superior to the sunrise,—*i. e.*, the electric tension is higher at

sunset than it is at sunrise. In the sunrise and sunset curves the maximum occurs in January instead of February; in other respects there is considerable accordance between the annual periods. In discussing the negative observations the author pursued altogether a different course,—the occurrence of negative electricity as compared with positive being rare. He first assembled all the cases of negative electricity that occurred in the seventeen months prior to 1845, and compared each observation with the records for the same period at the Observatory, Greenwich. The principal results of the comparison are:—first, that when the conductor has been negatively charged rain, generally heavy, has mostly been falling; the instances when rain has not fallen, the charge being negative, are very rare—only 10 out of 231;—second, These ten instances, with the assistance of the Greenwich observations, have enabled the author to infer that the negative charge is derived more immediately from the cloud precipitating the rain,—a particular kind of cloud, cirro-stratus, in almost every instance having been observed at Greenwich when the conductor has been charged negatively at Kew. From this he apprehended the possibility of obtaining a diurnal period of negative electricity more or less in accordance with the diurnal period of cloudiness; and with this view he discussed the remaining 424 negative observations. The result is perfectly in accordance with that of the discussion of the preceding eventeen months; the greater occurrence of negative electricity as well as its increase of tension coinciding within certain limits with the greatest development of cloud, the epoch being about the middle of the day. The results of the entire discussion cannot be better expressed than in the words of the concluding portion of the Report. "In both instances (the positive and negative) the humidity and cloudiness precede the electricity, and strongly indicate that whatever relation may exist between the development of positive electricity and humidity on the one hand and that of negative electricity and cloudiness on the other, such relations are not only likely to be of very constant character, but that a similarity exists between the two sets of phenomena which goes far to show that the nature of their connexion, if any, is also similar: the one, viz. positive, principally indicating the electric tension of aqueous vapour,—the other, viz. negative, the electric disturbances produced by the sudden precipitation of this vapour when existing as cloud."

'On the Orbitual Motion of the Magnetic Pole round the North Pole of the Earth,' by the Rev. J. Grover.—This was shown by tracing the positions of the magnetic pole at several intervals during the last 250 years, by converging lines drawn from the London, Paris, and St. Petersburgh observatories, and deduced by computations of the different variations of the magnetic needle at these places. These changes were shown very distinctly upon the different polar horizons of the observatories, and the orbit drawn from them in its proper position. An extraordinary acceleration of this motion from 1580 down to 1723 was pointed out, and a pause at that period, which indicated a climax in that year, in which both the horizontal movement of the needle was suspended, and the dipping motion changed its course from a downward to an upward motion. Mr. Grover showed also a series of changes in the lines of equal declination about the isodynamic poles, which appeared to indicate a direct tendency, or attractive force operating upon the magnetic needles from the poles; which he assumed and showed to be sufficient to account for the extra linear position of the lines of no declination between Europe and Asia as well as for the extraordinary curvatures of the declination lines observed in the north of Asia on the two sides of the isodynamic pole, and on the origin and changes of the closed systems or ovals in the Asiatic and Pacific dislocations. Mr. Grover regarded the moving magnetic pole in the light of a satellite, or supplemental system, to the isagonal poles, disturbed by the accumulation of ice about the poles in the course of a long series of ages and generated as a compensative process from an interruption of the original system.

'On a Rainbow seen after Actual Sunset,' by Prof. Chevallier.—On the 1st of July 1849, at Esk, near Durham, I observed a rainbow, which continued to be visible after the setting of the sun's complete disc. The latitude of the place has been determined accurately by Bessel's method of observing the transit of stars over the eastern and western prime vertical; and assuming the horizontal refraction to be 33′, the time of the setting of the sun's upper limb was $8^h.\ 36^m.\ 2^s$. The time of sunset could not be observed in consequence of clouds. At $8^h.\ 31^m.\ 43^s$. the bow seemed to be a portion of a circle greater than a semicircle, like a Saracenic arch, both the northern and southern portions being visible to an altitude of about 40°. At $8^h.\ 34^m.\ 43^s$. the southern end had faded, but the northern end and a part of the secondary bow were visible at about 5° of altitude, the sky being visibly darker between the primary bow. This continued visible till $8^h.\ 37^m.\ 48^s$., $1^m.\ 48^s$. after complete sunset; and as late as $8^h.\ 38^m.\ 43^s$., $2^m.\ 41^s$. after sunset, an irregular portion of the bow was visible at an altitude of about 45°. The time was accurately known by comparing the watch with a transit clock immediately after the observation. In order to account for this appearance, it must be supposed either that the horizontal refraction was much greater than usual, or that the bow was formed at a very elevated region of the atmosphere.

'On Luminous Meteors,' by Prof. Powell.—This was an extensive collection of facts collected from numerous observers, forming a continuation of the report on this subject drawn up last year by Prof. Powell at the request of the Association. In each case the exact circumstances attending each meteor were given accurately, frequently as seen in several places at the same time; the periods of showers of meteors at given times of the year, were given in some instances from separate observations. Meteors seen by day passing between the observer and the earth were in some cases recorded; these were supposed to be in some instances the cause of unusually cold days. Those which were suddenly extinguished as if being previously illuminated by the sun and at an instant ploughing into the shadow of the earth were much attended to as giving assistance to the researches of Sir John Lubbock and other investigators of this subject.—Several members of the Section gave examples of meteors which came under their notice, and expressed their hope that this communication should be printed at length in the Report.

'On Meteors,' by Mr. Lowe.—This communication formed a continuation of the previous one, and Prof. Powell expressed his intention to incorporate it with his Report.

'On Shooting Stars,' by Mr. Birt.—This also formed a continuation of the same subject. Several of the observations were accurately projected, and the important circumstances of all carefully noted.

'On a Notice of a Meteor seen in India on the 19th of last March,' by Admiral Sir C. Malcolm.—This consisted of selected notices of the meteor from the *Bombay Times* of March and April, and contained several letters detailing the circumstances under which it was seen by the different writers—from which it was inferred to be a mass of over 600 feet in diameter; and the place at which it fell after bursting was ascertained to a high degree of probability: it fortunately was not an inhabited place.

'On Teaching Perspective by Models,' by Mr. Twining.—Mr. Twining exhibited models and demonstrated by figures drawn on glass the importance of having the perspective plane selected in a proper position to the several groups to be embraced in the picture, and the distance of that plane properly proportioned to the breadth of the picture.

Section B.—CHEMISTRY, including its Applications to Agriculture and the Arts.

President—Dr. Percy, F.R.S.

Vice-Presidents—Prof. Apjohn, Prof. Graham, Mr. R. Phillips, Dr. Miller, Dr. Andrews, Mr. J. Gassiot.

Secretaries—Messrs. G. Shaw, R. Hunt.

Committee—Dr. Faraday, the Marquis of Northampton, Dr. Schrœter (Vienna), Prof. Magnus, Prof. Daubeny, Dr. L. Playfair, Messrs. W. West, T. Pearsall, Prof. Forchammer, Dr. De Vry, Dr. Schunck, Messrs. W. H. Pattison, R. Warrington, T. Ward, G. Teschmacher, Prof. Ronalds, Messrs. J. P. Joule, R. Mallet, Dr. Scoffern, Capt. T. L. Lewis, Dr. Gladstone, Prof. Wilson, Prof. Rinman.

'On the combined use of the Basic Acetates of Lead and Sulphurous Acid, in the Colonial Manufacture and the Refining of Sugar, by Dr. Scoffern.'—Dr. Scoffern, after a few preliminary remarks on the anomalies which beset the colonial sugar-manufacturing functions, stated the actual amount of pure white and crystallizable sugar existing in the sugar-cane juice to be from 17 to 23 per cent., and the amount of juice contained in the cane to be about 90 per cent.: of this amount only 60 per cent. on an average is extracted,—and of this quantity only one-third part of its sugar is obtained, in a dark impure condition, instead of white and pure as it might be extracted. The operation at present generally followed in the colonial production of sugar involved the use of lime, an agent which although beneficial in separating certain impurities and decomposing others, effects both these agencies at the expense of two-thirds of the original sugar. Curious plans had been followed to avoid the use of lime:—alumina, in its hydrated condition, had been employed, but with inconsiderable success. As a purifying agent the basic acetate of lead was known to be most potent, but could not be generally employed, owing to the existence of no sufficient means of separating any excess of that agent which might remain. Dr. Scoffern effects this separation by means of sulphurous acid forced by mechanical means into the sugar solutions. The process had been used for more than twelve months in one of the large British refineries, and a lump of sugar prepared by means of the operation was exhibited. The advantages presented by this operation were thus summed up:—1. As applied to cane-juice, and other natural juices containing sugar, it enables the whole of the latter to be extracted instead of one-third as is now the case: and in the condition of perfect whiteness, if desired, without the employment of animal charcoal. Owing to the complete separation of impurities the juice throws up no scum when boiled, and therefore involves no labour of skimming. Finally, the process of curing is effected in less than one-third of the present time,—and the quality of the sugar being in all cases so pure and dry, no loss in weight occurs during the voyage home. 2. As applied to the refinery operation, it enables the manufacturer to work upon staples of such impurity that he could not use them on the old process. It yields from these staples a produce equal in quality to the best refined sugars produced heretofore—in larger quantity, and in less time. It banishes the operation of scum-pressing, the employment of blood and lime. Finally, its cost is even less than that of the present refinery process.

Dr. Miller remarked that it had been objected that sulphurous acid absorbed oxygen, and passing into sulphuric acid impaired the grain of the sugar. Dr. Playfair said it had been stated that sulphurous acid gave a taste to the sugar. Dr. Scoffern observed that his specimens proved that neither of these objections was valid. It having been asked if voltaic electricity had been found successful in removing the salts of lead from the sugar in Dr. Scoffern's process, Dr. Faraday expressed his opinion that it was impracticable. Prof. De Vry thought the molasses would contain acetate of lime which would be unfit for the uses to which it is put in Holland.

'On the presence of Fluorine in the Waters of the Firth of Forth, the Firth of Clyde, and the German Ocean,' by G. Wilson, M.D.—In 1846, the author announced the discovery to the Royal Society of Edinburgh, of fluorine as a new element of sea water. He was led to search for it, after observing that fluoride of calcium possesses a certain small but marked solubility in water, which explains its occurrence in springs and rivers, and necessitates its occasional, if not constant presence in the sea. The only specimens of sea water he had examined before this summer, were taken from the Firth of Forth, at Joppa, about three miles from Edinburgh. He obtained the mother-liquor or bittern from the pans of a salt-work there, and precipitated it by nitrate of baryta. The precipitate after being washed and dried was warmed with oil of vitriol in a lead basin, covered with waxed glass having designs on it. The latter were etched in two hours, as deeply as they could have been by fluor-spar treated in the same way, the lines being filled up with the white silica, separated from the glass. The author has recently examined in the same way bittern from the salt-works at Saltcoats, in the Firth of Clyde, but the indications of fluorine were much less distinct than in the waters on the East Coast. On procuring, however, from the same place, the hard crust which collects at the bottom and sides of the boilers used in the evaporation of sea-water, he found no

difficulty in detecting fluorine in the deposit. This crust or deposit consists in greater part of sulphate of lime, and of carbonate of lime and of magnesia, but it contains also much chloride of sodium, and the other soluble salts of sea water, entangled in its substance. When sulphuric acid, accordingly, is poured on it, it gives off much hydrochloric and carbonic, as well as some hydrofluoric acid, and the latter is thus swept away before it has time to corrode the glass deeply. The author preferred, nevertheless, to use the crust exactly as he got it, that the proof of the presence of fluorine might not be impaired in validity by the possibility of that substance being introduced by the water or re-agents which must have been employed, had the chlorides and carbonates been separated from the crust by a preliminary process. The crust, accordingly, after being dried and powdered, was placed along with oil of vitriol in a lead basin covered by a waxed square of plate glass, with letters traced through the wax. A single charge of the crust and acid corroded the glass very slightly, but by replenishing the basin with successive quantities of these materials, whilst the same plate of engraved glass was used as the cover, he found no difficulty in etching the glass deeply. Operating in this way, he has found fluorine readily in the boiler deposit from the waters of the Firths of Forth and Clyde. It is a less easy matter to subject the waters of the open sea to the requisite concentration, before examination. It occurred to the author, however, that the incrustations which are periodically removed from the boilers of the ocean steamers would serve to determine the question whether fluorine is a general constituent of the sea. He made application, accordingly, at Glasgow and Leith for the deposits in question. It appears, however, that the deep-sea steamers which leave the former have their boilers cleaned out at other ports, so that he has as yet been unsuccessful in procuring crusts from the west coast of Scotland. He has obtained at Leith the crust from the boiler of a steamer called the Isabella Napier, which trades between that port and Wick, so that the greater part of the water consumed as steam by its engines is derived from the German Ocean, although a portion is necessarily obtained from the Firth of Forth. The crust from the boilers of this vessel was treated in the way described, and at once yielded hydrofluoric acid. A single charge, indeed, of the materials marked the glass distinctly, and four charges deeply. We may therefore infer that fluorine is present in the waters of the German Ocean, for different portions of the deposit yielded it readily, and marked glass as deeply as the deposit from the water of the Firth of Forth did, which could not have been the case if the whole crust had not contained fluorine pretty equally diffused through it. From what is known of the comparative uniformity in composition of sea water, it may safely be inferred that if fluorine be present in the waters of the Firths of Forth and Clyde, and in the German Ocean, it will be found universally present in the sea. Mr. Middleton, before 1846, came to the conclusion that fluorine must be present in sea water, since it occurred, as he had ascertained, in the shells of marine mollusca. Silliman junior, without a knowledge of Middleton's views, drew the same inference from its invariable presence in the calcareous corals brought to America by the United States expedition from the Antarctic Seas. The author has found fluorine abundantly present in the teeth of the Walrus, which points to its existence in the Arctic Ocean; and it seems so invariably to associate itself with phosphate of lime, that it may be expected to occur in the bones of all animals marine and terrestrial. The author has found fluorine likewise in kelp from the Shetlands, but much less distinctly than he anticipated. Glass plates were only corroded so far as to show marks when breathed upon. Prof. Voelker, also, was kind enough at the author's request to search for fluorine when analysing the ashes of specimens of the sea pink (*Statice Armeria*), which had grown close to the sea shore, and contained iodine, and found fluorine in the plant. When all those facts are considered, it is not too much, the author thinks, to urge that fluorine should now take its place among the acknowledged constituents of sea water. He has entered at length into the consideration of the natural distribution of this element, and into other details connected with it, in a paper in the 'Transactions of the Royal Society of Edinburgh,' vol. xvi, part 7, and in a communication made to the Association at its Southampton meeting. The *Statice Armeria* may certainly be added to the list of plants containing fluorine, and so may the *Cochlearia Anglica*, in specimens of which obtained from the Bass Rock, and analysed in Dr. Wilson's laboratory, Dr. Voelker has also detected this element.

Specimens of etched glass were shown to the Section in illustration of this communication.

Prof. Forchammer confirmed the results of Dr. Wilson. He had examined sea water from near Copenhagen, and found fluorine in every instance. He had also examined many shells and marine products from various localities, and they all gave the same body—the quantity of which was always greater in sea than in land animals. Mr. Pearsall thought he had detected fluorine in many waters from springs and rivers.

'On Phosphorus as producing cold short Iron,' by Mr. Rinman.—This was a statement of the discovery in the Swedish iron of phosphorus whenever it presented the peculiarity of being cold short, as it is technically termed. The process adopted was the following: The pig-iron, weighing about three grammes and reduced to small pieces, was dissolved in diluted nitric acid, the solution evaporated to dryness, the dry mass heated strongly with free access of air in order to destroy all carbon. After heating, the dry mass was triturated and mingled with six times its weight of soda, a little chlorate of potass and a little silica, and smelted as long as any gas was disengaged. The smelted mass was exhausted by boiling water, and digested for some hours. The solution was filtered, the undissolved residue washed with hot water, containing a small quantity of chloride of ammonium. The solution was evaporated to dryness, and the dry mass treated with hydrochloric acid and dissolved in water. After filtration, the solution was neutralized, and the phosphate of lime was precipitated in a closed vessel by a solution of chloride of calcium with ammonia. This method is published more extensively by T. Akerman, professor in Fahlun.

Dr. Percy spoke of the importance of this inquiry—particularly in such a district as Birmingham. He then instanced many of the peculiarities of the Staffordshire iron which contain phosphorus; and spoke of the peculiarity of the Berlin iron, which is so singularly fluid in casting as being probably due to some such combination.—Dr. Ronalds, Dr. Miller, and Mr. R. Phillips confirmed the fact of the general presence of phosphorus in cast iron.

'On the comparative Cost of making various Voltaic Arrangements,' by Mr. W. S. Ward.—The author stated that a series of calculations founded on data, produced to the Chemical Section at Swansea, showed the efficient power of three generally used forms of battery known as Smee's, Daniell's, and Grove's, would be equal when 100 pairs of Smee's, 55 pairs of Daniell's or 34 pairs of Grove's were used, and that the expense of working such batteries as regards a standard of 60 grains of zinc in each cell per hour, would be about 6*d*., 7½*d*. and 8*d*. respectively.

This communication led to conversations on the economy of the Electric Light and Electro-Magnetic Engines, in which Dr. Faraday, Mr. Shaw, Mr. Hunt, Mr. Elkington and other gentlemen joined.—Dr. Faraday remarked on the imperfect character of the electric light, and its inapplicability for purposes of general illumination: all objects appearing dark when the eye was embarrassed by the intensity of the electric arc.—Mr. Shaw and Dr. Percy instanced the magneto-electric machines which are employed at Birmingham for electroplating, in which the current cost of the motive power—viz., a steam-engine to put the magneto-electric machine in action was the only working cost.—Mr. Elkington stated that they had never been induced to abandon the voltaic battery which they employed in their manufactory, finding it more economical than the magneto-electrical machine of which he was the patentee. He also stated the remarkable fact that a few drops of the sulphuret of carbon added to the cyanide of silver in the decomposing cell, had the property of precipitating the silver perfectly bright, instead of being granulated so dead as it is when thrown down from the solutions ordinarily employed.

Section C.—GEOLOGY AND PHYSICAL GEOGRAPHY.

President—Sir C. Lyell, F.R.S.

Vice-Presidents—Sir H. T. De la Beche, Rev. A. Sedgwick, The Dean of Westminster, Mr. I. Horner, Sir R. I. Murchison.

Secretaries—Mr. J. B. Jukes, Prof. A. C. Ramsay, Prof. Oldham.

Committee—Prof. D. T. Ansted, Dr. Apjohn, Messrs. R. C. Austen, E. W. Binney, S. H. Blackwell, J. K. Blackwell, J. S. Bowerbank, Prof. Buckman, Lieut.-Gen. the Earl of Cathcart, Dr. Danbeny, Prof. S. Forchammer, Messrs. J. Gray, R. Griffith, W. J. Hamilton, J. Hogg, W. Hopkins, R. Hutton, Capt. James, Dr. Lloyd, Messrs. R. Mallet, W. Mathews, The Marquis of Northampton, The Lord Bishop of Oxford, Prof. Phillips, Messrs. H. E. Strickland, J. Tennant, Dr. Wickenden.

'On the General Relations of the New Red Sandstone, the Coal Measures, and the Silurian Rocks of the South Staffordshire Coal-field,' by J. B. Jukes.—The nature and position of the strata concealed beneath the new red sandstone is a matter of great practical importance as well as geological interest. The new red sandstone itself extends across England without interruption, ranging nearly north-east by south-west, whilst the Coal Measures and other older strata possessing a high economic value, are broken and irregular in their distribution. In the centre of England the new red sandstone expands into a great plain, on each side of which are several small detached coal-fields, and three others, appearing like islands, are entirely surrounded by it—namely, the coal-fields of Leicestershire, Warwickshire and South Staffordshire. The inquiries of the author have been directed to ascertain whether these coal-fields are bounded by faults, in which case we might expect to find the coal beneath the whole extent of the new red sandstone plain,—or whether the boundaries of the coal measures are not rather to be considered as ancient cliffs and slopes caused by denudation, as in this alternative it will become probable that the coal measures were wholly or in great part destroyed and removed from the intervals between the present fields before the deposition of the new red sandstone. The researches of Sir R. Murchison, and more recently of the Geological Survey, have shown that the three groups of stratified rocks in South Staffordshire—namely, the new red sandstone, coal measures and Silurian strata—are each unconformable to the other, because, although they have often nearly the same dip, yet the upper beds are found to rest on different portions of the lower strata at different localities. On the western side of the coal-field the Silurian strata, when apparent, consist of the Ludlow rocks, as at Sedgley and the Hayes; in the centre of the field the coal measures rest on the upper part of the Wenlock rocks, as at Dudley and the Wren's Nest; and further east, at Hay Head, a lower limestone appears, which is probably the equivalent of that at Woolhope. On the south of the district the coal measures rest on Silurian shale and approach the quartz rock of the Lickey—the equivalent of the Caradoc sandstone. This unconformability indicates an uplifting of the Silurian rocks, and considerable denudation previous to the deposition of the coal measures. In the railway cutting near Dudley the horizontal coal shale and sandstone was seen abutting against a small cliff of Silurian rocks, and contained small quartz pebbles, making it look like an old beach. The unconformability of the new red sandstones to the coal measures is of the same nature and owing to the same cause; at West Bromwich the upper coal measures below the new red sandstone are not more than 120 or 130 yards thick, whilst a mile off it is 190 yards where there is no new red sandstone; in other parts it is 200 and 300 feet thick, without any new red sandstone. The boundary of the coal-pit on the south-west is a great downcast joint running from Walsall to West Bromwich and Oldbury, gradually increasing in amount to the south till it becomes 160 yards; this fault brings in the new red sandstone on the east, covering the coal measures, which are worked beneath it at several points; but the coal rests on Silurian shale, which in more than one instance has been found immediately beneath the new red sandstone, with no coal intervening. The western boundary of the coal-field is evidently at some points a fault with a very large downcast to the west. Along the southern boundary the coal and new red sandstone have scarcely any perceptible dip, and appear to be conformable; but there was probably an interval between their deposition, since pebbles of coal are found in the

bottom beds of the new red sandstone. It thus appears:—1. That the Silurian rocks were upheaved and denuded before the deposition of the coal measures. 2. That there was a movement and denudation of the coal measures, amounting in some localities to their entire destruction and removal before the deposition of the new red sandstone. 3. That subsequently to the deposition of the new red sandstone, there was a very great movement of all these rocks, producing their present faults and inclined positions. 4. That the boundaries of the South Staffordshire coal-field, as far as examined, present examples of three kinds of relation between the coal measures and new red sandstones, *i.e.* by conformable succession; by fault, the coal measures being present on the downcast side; and thirdly, where the destruction of the coal measures has brought the new red sandstone into immediate contact with the Silurian strata. Whilst, however, there is great hope that the larger part of the new red sandstone plain conceals productive coal measures, there is no probability that these will be found at a depth of less than 500 or 600 yards below the surface.

Sir R. I. Murchison expressed his belief that at some future time the whole interval between Wolverhampton and Coalbrook Dale would be worked for coal.

'On the Igneous Rocks of the South Staffordshire Coal Field,' by Mr. S. H. Blackwell.—The superficial extent of the igneous rocks in South Staffordshire was first described by Mr. Keir, in Shaw's history of the county; their under-ground development by Mr. Arthur Aikin, afterwards by Mr. Yates, and again by Sir R. I. Murchison in the 'Silurian System'; the progress of mining operations has continually added to the information respecting them. The trap rock, known to the miners of this district as the Green Rock, is most extensively exposed in the Rowley Hills, occupying an irregular area of about two miles in length, and half a mile to a mile and a half in breadth; it also appears in small isolated masses at Netherton Hill, Barrow Hill, and Cooper's Bank, to the south of the Rowley Hills, and north of them, at the Heath Colliery, near Wolverhampton, the Neachells, the New Cross near Wednesfield, at Wednesfield itself, and at Pouk Hill, near Walsall. These scattered points of trap rock on the surface would give no idea of its subterranean extent, since it is met with at different depths from the surface, over a great portion of the Wolverhampton coal district. When sunk through by the coal-shafts it often appears to be interstratified with and conformable to the coal, and varies much in thickness and position; but as the workings in the coal have become more connected it has been ascertained that there exists only one continuous bed of underground trap which has been already traced from a point one mile north of the Rowley Hills to the Errington Brickyard,—a distance of nine miles, with a maximum breadth of four miles between Wednesfield and the Birch Hills. The depth of this stratum beneath the surface, at the point nearest the Rowley Hills, amounts to 175 yards, and it becomes gradually deeper to the northward for 2½ miles, where it is 234 yards deep; in this tract it is from 5 to 11 yards thick, and only from 5 to 11 yards above the junction of the coal with the Silurian strata. Further north it rises rapidly towards the surface, crossing the ironstone bands and coal strata, which it sometimes splits, and attaining a thickness of from 80 to 90 yards. At Wednesfield New Colliery it again descends to the depth of 17 yards, with a thickness of 44 yards; at New Cross it again rises to the surface, and continues so up to the fault which bounds the coal district. The variations in the thickness of the trap rock are due to irregularities of its upper surface only, the under surface remaining level. The area of this underground stratum of trap as at present ascertained amounts to 25 square miles. The swellings of the upper surface of the trap, sometimes rising 60 or 70 yards, cause considerable irregularities in the ground above, which are still further increased and complicated by numerous small faults, locally "slip-things," which do not extend below the trap, as the larger faults do; the upper surface of the trap also gives off numerous vertical dykes, which send off branches horizontally into the coal strata, there again subdividing into smaller veins of a white colour; these veins when first discovered often appear isolated, but as the working proceeds, their connexion with the subjacent dyke or stratum of trap is usually made apparent. To the south-west of the Rowley Hills four other subterranean beds of trap occur, whose connexion with each other or with the Rowley trap has not yet been traced. The rocks in contact with the trap are always more or less altered by it; and the change is always greater *above* the trap than below it; bituminous coal becomes anthracite, but the intervention of any thin shale has been sufficient to protect it. Ironstone is rendered black if in contact, green if separated by shale; the shales are indurated, the sandstones rendered quartzose and almost vitrified. The "green-rock," or trap, itself is most compact in the Rowley Hills, and becomes coarser at a distance, especially in the "swellings" where crystals of mesotype and phrenite are common; it is darkest coloured in the central and thick beds, becoming lighter coloured and even white in the veins. The second part of Mr. Blackwell's paper described the Faults which traverse the South Staffordshire Coal-field.—This coal-field is bounded on the west and east by great lines of fault, beyond which the new red sandstone occupies the place of the coal. The downthrow of the great western fault has been ascertained in one place to amount to 300 yards. The centre of the field is crossed by the hills of Silurian rock at Sedgley, Wren's Nest and Dudley, and by the trap rock of Rowley; to the north of this line the level and apparently unbroken surface is traversed by numerous east and west faults, some of which extend quite across the coal-field; nearer Rowley the faults range more north-east and south-west; and to the south of the Rowley Hills they are smaller and more irregular, but still somewhat north-east by south-west. The most northern of the large faults, near Wolverhampton, is a downthrow to the north, of 120 yards in its central and deepest part; those which succeed are downthrows to the south of 40, 70, 79, 130, and 50 yards respectively at the deepest part, coming towards either end, and often quite disappearing without reaching the boundary of the field; these are followed by the Dudley-Port trough faults, the first a downcast to the south-east of 30 yards, the second a rise to the same amount; the West Bromwich and Oldbury faults are downthrows to the east of 40 and 170 yards. On the southern part of the coal-field one great fault runs north-west and south-east parallel with the hills, and having a maximum downthrow to the west of 150 yards; some of the smaller north-east and south-west faults extend from this line to the great western boundary fault, whilst others die out at shorter distances; some of them amount to 150 and 200 yards. In concluding, the author states—1. That the transverse faults must have been produced subsequently to the boundary faults and to the elevation of the Silurian hills. 2. That the direction of these faults is dependent on the central line of elevation. 3. That the great centre of this system is the Dudley-Port trough. 4. That the underground trap of Wolverhampton proceeded from the Rowley Hills, and was injected prior to the formation of the east and west faults, which were probably caused by the withdrawal from beneath the coal strata of the great mass of igneous rocks in the Rowley Hills and Wolverhampton stratum; on the southern side of the field, the downthrows of the coal are also greatest near the large central mass of trap.

Sir H. De La Beche and Mr. Jukes acknowledged the valuable service Mr. Blackwell had rendered to the Geological Survey, by the use of his maps and sections.—Prof. Sedgwick remarked on the difficulty of accounting for the injection of such enormous masses of trap rock as were here described, or such as the Great Whinsill of the North of England, by any dynamical means; he also pointed out the difference between these beds, which had evidently been injected horizontally between the layers of strata already consolidated, and other instances in which (like lava-streams spread over the bed of the sea) the trap had been originally uncovered, but had become buried beneath gradually accumulating strata at the bottom of the sea.—Mr. Phillips attributed these and other similar systems of faults to movements of elevation and depression taking place subsequently and subordinately to other elevatory movements, by which lines and areas of greater and less resistance were formed; there was no necessity for supposing any sudden or violent action, but only a gradual change in the dimension of a given area in one direction.

A letter was read, from Mr. I. Lea, the American Conchologist, to the Dean of Westminster, 'On the Discovery of Reptilian Foot-prints in the Old Red Sandstone, near Pottsville, Pennsylvania.'—The foot-prints in question were discovered by Mr. Lea, in the gorge of the Schuylkill, in the Sharp mountain near Pottsville, on a slab of sandstone, which is also ripple-marked, and impressed by raindrops; they consist of six distinct impressions in a double row, each foot-mark being doubled, by the hind foot having fallen into the track of the fore foot, but rather in advance of it. The fore feet had five toes, three of which were apparently armed with claws; the length of each double impression is 4½ inches, its breadth 4 inches; the outside breadth of the double track is 8 inches; the length of the step 13 inches; the impression of the dragging of the tail is distinct, and occasionally obliterates part of the foot-steps; the ripple-marks are 7 or 8 inches apart. The foot-marks are described as bearing a remarkable resemblance to those of the recent alligator, and also as somewhat like those of the Chirotherium of the new red sandstone; but, as the animal was doubtless peculiar, Mr. Lea proposes to call it *Sauropus primævus*. The geological position of the foot-marked sandstone is about 8,500 feet below the upper part of the coal formation, in which Dr. King lately discovered the foot-prints of a reptilian quadruped in the Western coal-field of America.

Sir C. Lyell stated, that until a recent period, no indications of air-breathing animals more highly organized than insects were known below the Permian system. Dr. Goldfuss had, however, discovered the skeletons of two reptiles in the coal strata near Trèves; and he was disposed to consider the rock described by Mr. Lea as really belonging to the old red sandstone.

Section D.—Natural History, including Physiology.

President—Mr. W. Spence.

Vice-Presidents—Messrs. J. Hodgson, J. G. Jeffreys, Prof. W. H. Acland, Dr. Roget, Mr. C. C. Babington, Dr. W. P. Alison, Dr. R. Fowler, Prof. E. Forbes.

Secretaries—Dr. Lankester, Dr. Russell.

Committee—The Bishop of Oxford, Prof. Knowles, Dr. Palmer, Prof. W. S. Cox, Prof. Wescott, Messrs. J. Hogg, J. S. Bowerbank, R. Taylor, B. Maund, C. W. Peach, Prof. Milne-Edwards, C. L. Bonaparte (Prince of Canino), Messrs. A. Strickland, W. Clear, J. E. Winterbottom, Prof. Daubeny, Messrs. H. E. Strickland, R. Austin, Dr. Grosbans, Dr. Boogaard, Dr. Macdonald, Prof. Allman, Dr. G. Lloyd, Messrs. J. W. G. Gutch, R. Ball, A. Henfrey.

The business was commenced by Prof. Daubeny, who read a report 'On the Action of Carbonic Acid, on Plants allied to the fossil remains found in the coal formation.'—The apparatus used in these experiments was so constructed that a constant supply of carbonic acid could be kept up, so that plants or animals exposed in it were constantly subjected to the same quantities. The result of the experiments were, first, that quantities of carbonic acid, not exceeding 5 per cent., did not appear to affect injuriously species of ferns or pelargonium; second, a quantity amounting to 20 per cent. injured plants exposed to it; third, the quantity of oxygen given out by plants was not found to be increased by the quantity of carbonic acid, to which they were exposed; fourth, on exposing animals to the action of carbonic acid, it was found that frogs and many fish could live in an atmosphere charged with 5 per cent. of carbonic acid. From these experiments he concluded that no objection could be offered to the theory of a large proportion of carbonic acid having existed in the atmosphere in the early periods of the world's history.

Mr. Austin did not think the theory, broached by M. Brongniart, of the large quantity of carbonic acid in the early atmosphere of the earth tenable nor necessary to the explanation of the phenomenon of the great vegetation of the coal period. It was not even now well determined whether the principal part of that vegetation consisted of ferns. From his own experience in the growth of ferns he had found that the soil in which they were placed greatly modified their growth. He did not think the temperature of Great Britain much changed since the coal period. Few of the ferns found in the coal possessed any fructification, whilst those in more

southern beds presented it. This agreed with his own experiments, in which he found that the ferns of tropical climates would not fructify at a low temperature. —Prof. MILNE-EDWARDS said that the theory which explained the deposition of the mountain limestone by the chalk held in solution by carbonic acid was opposed to the fact that zoophytes generally soon died when the water in which they were kept was tainted with carbonic acid. He hoped Dr. Daubeny would extend his researches.

'Observations and Experiments on the Noctiluca Miliaris, the animalcular source of the phosphorescence of the British seas, together with a few general remarks on the phenomena of vital phosphorescence,' by Dr. PRING. — After reciting various observations by others on the phosphorescence of animals, the author detailed his own experiments at Weston-super-Mare, upon a small vesicular animal, not more than one-thousandth part of an inch in diameter, which possessed very remarkable luminous properties. This animal the author believed to be the *Noctiluca miliaris*. It occurred sometimes in so large quantities, and was so luminous, as to give the sea the appearance of a sheet of fire. After detailing its structure, the author gave the results of experiments upon the light emitted. Galvanism increased the luminosity; oxygen gas and carbonic acid gas also increased the light, but the latter most speedily killed the animal; sulphuretted hydrogen quickly destroyed the light; nitrogen, nitrous oxide, and hydrogen produced little or no effect on the luminosity; strong mineral acids increased for a moment but speedily afterwards destroyed the light; ether instantly destroyed the life of the animal; chloroform increased the light and then destroyed the animal. The author then instituted a comparison between his own experiments and those of Prof. Matteucci on the glow-worm; and after examining the various theories put forward to account for the luminosity of animals, concluded that the phenomena could not at present be referred to any more general fact with which we are acquainted.

Mr. R. TAYLOR referred to Ehrenberg's papers and to his opinion that the luminosity of animals depended on electricity.—Prof. M. EDWARDS referred to facts which could not be explained either on the supposition of the cause being electricity, phosphorescence or combustion.—Sir E. BELCHER related a number of facts with regard to the phosphorescence of the ocean, and expressed his conviction that it was not a living process.

A letter was read from Mrs. Whitby.—

Birmingham (Newlands).

"I had proposed offering to the British Association a short account of my progress in the art of cultivating silk in England; but I left Newlands before all the produce of this year could be wound off from the cocoon; and it will not, therefore, be in my power to make my report as full, or as statistical, as I could desire. I am, however, unwilling that this meeting should pass, without endeavouring in some way to satisfy the expectations of those who have been sufficiently liberal to pay regard to my convictions that the cultivation of silk may with little trouble or expense be made general, and in the end become a profitable speculation. From the period when I had the honour to place before you an account of my early trials, I have paid attention to the cultivation of the mulberry, especially of that species which I introduced in 1846, viz., the *Morus multicaulis* of the Philippine Islands. I have three other kinds of white mulberry, which all grow well at Newlands; but as none are so easily propagated as the *multicaulis*, or bear so great a weight of leaf, I have increased my plantation with them chiefly. I said, in my letter to the Royal Agricultural Society in 1844, that it was as easy to do so as to propagate the willow. I now say, that it is much easier, and the produce is more abundant. The produce of leaf this year has been immense, and even now, after having plucked them closely to feed my silkworms, they are strong and vigorous, and present a luxuriance of growth scarcely to be credited—unseen. I find the cuttings which are rooted in the open ground produce stronger and healthier plants than those struck under glass. One of my early pupils has a productive nursery at Godalming of the *Morus alba*—many others in different parts of England are planting; and if gentlemen in England and Ireland who have a few acres or roods of land to spare would plant mulberries for posterity as they do their oaks, we should, in a few years, be independent of other countries for our supply of raw silk. With regard to the rearing of the silkworm—as their habits become more practically known to me, I find less and less difficulty in bringing them to perfection; and am confirmed in my belief, that with due attention to their peculiarities they may be reared in England as easily as in any other country, and with as little loss by death. Equable warmth throughout the period of their existence, (which may be shortened or prolonged at pleasure,) cleanliness, classification, and ventilation, with the adaptation of the food (as to its maturity) to the different ages of the insect will insure success. I have been this season very successful in rearing the worms I was able to hatch; they had no disease of any kind—they made their cocoon in thirty days, and the silk I have been able to wind off is as strong, and bright, and beautiful, as that which, in 1844 and 1845, was pronounced superior to the best Italian raw silk. There are many persons in England, and a few in Ireland, who have begun the experiment on a small scale. It requires time to mature and perfect any undertaking; but, if I live long enough, and the growth of the mulberry becomes generally encouraged, I have no doubt my ardent wish to see the cultivation of silk established in England will be realized. M. S. S. WHITBY."

Dr. PAXTON read a paper 'On Pathological Drawings,' and exhibited a series of illustrations of disease.

SECTION F.—STATISTICS.

President—Lord LYTTLETON.

Vice-Presidents—Col. SYKES, Messrs. PORTER, D. HILL, J. HEYWOOD.

Secretaries—Prof. HANCOCK, Mr. F. G. NEISON, Dr. FINCH.

Committee—The Earl of Harrowby, The Bishop of Manchester, The Chevalier Bunsen, M. Dronyen De Lhuys (Ambassadeur de France), M. T. C. Viennot (Attaché à l'Ambassade de France), Prof. Roxher, M. Petermann, M. Cochelet (Consul-General of France), Messrs. W. Spence, J. Fletcher, R. A. Slaney, Rev. C. Cooke, Messrs. T. Tooke, F. Dickson, R. W. Rawson, Dr. W. P. Alison, Messrs. J. Shuttleworth, H. Hutton, J. Crawford, W. Hogan.

'A Report on the Sanitary Condition of Darwen, Lancashire, with Suggestions for its Improvement,' in a Letter from J. PATON, Esq., Civil Engineer, read by J. HEYWOOD, Esq., M.P. F.R.S. was followed by a short discussion as to whether Darwen might be considered as one of many similar places—on the necessity of compulsory regulations in laying out new streets—on the practicability of limiting the number of dwellers in houses—on the freedom of Birmingham from cholera—and on the dislike to centralization as an obstacle in the way of the application of the Health of Towns Bill—on a modern Ædileship, &c. In this discussion, Col. SYKES, Lords LYTTLETON and HARROWBY, Messrs. SLANEY, M.P., SHUTTLEWORTH, DAWSON, SANDERS, BRACEBRIDGE, &c. took part,

'On the Agricultural Statistics of Ireland,' by G. R. PORTER.—A volume of considerable interest and importance, entitled 'Returns of Agricultural Produce in Ireland in the year 1848,' has recently been distributed to the members of the two Houses of Parliament, and it is thought that a short abstract of its contents may prove interesting to the Section. This volume more than fulfils the promise set forth in its title-page, since it comprises also the returns of agricultural stock and produce in the preceding year, 1847, and thus enables us to draw a comparison between the two years as regards this most important branch of the national industry, under circumstances which give to such a comparison an interest far greater than it would have possessed at almost any other period. The returns have been obtained at the desire of Lord Clarendon, under the direction of Capt. Larcom of the Royal Engineers, who, it will be remembered, read before this Section at the meeting of the Association held at Cork in 1843, a valuable and elaborate paper on the Census of the Population of Ireland in 1841, in which paper a considerable amount of information was given that will admit of the comparison as respects some matters connected with agriculture being carried back to the year 1841. The returns embraced at both periods the number of farms or holdings, distinguished in different classes, according to their average contents, information of deep importance considering the faulty—it might rather be said—the fatal subdivision of the soil in that island; and it must be gratifying to learn, that a change in this respect is going forward, if not so rapidly as could be wished, yet more rapidly than could have been expected, from the known tenacity wherewith the Irish cotter had previously adhered to his patch of ground. The condition of the country in this respect in each of the three years above mentioned was:—

	1841.	1847.	1848.
Farms from 1 to 5 acres ..	306,915	125,926	101,779
— 5 – 15 — ..	251,128	253,630	225,251
— 15 – 30 — ..	78,954	150,999	146,725
Above 30 acres	48,312	137,147	140,817
Total Number	685,309	667,702	614,572

The number of holdings not exceeding an acre were, in 1847, 62,447; in 1848, 44,262.

The paper read by Capt. Larcom on the census returns did not give the number of these small holdings in 1841; but we may fairly presume that it must have been greatly beyond the number ascertained in 1847, seeing that the next smallest description of farms, those of one to five acres, had then decreased in the proportion of three-fifths, while those above thirty acres have increased in a three-fold proportion. The next census returns, which also will most probably be made under the direction of Capt. Larcom, will doubtless exhibit the effect which this change produces upon the cause of employment. The fact has on previous occasions been noticed, that while, in England and Scotland, the proportionate number of the population employed in raising food has been decreasing in a very remarkable manner, the contrary result has been experienced in Ireland. It was ascertained, at the census of 1841, that, in Great Britain, 1,000 persons engaged, as occupiers and labourers, in raising food, provided for the wants in that respect, of themselves and of 2,984 other persons, while, in Ireland, the like number of persons, viz. 1,000 so engaged, provided food for no more than 511 persons beyond themselves. In 1831, the number of occupiers not employing labourers—the lowest description of farmers—in England was 94,883 out of a population of 13 millions, whereas, in Ireland, a population of 7,700,000 furnished 564,274 of such small farmers. A great part of these have changed, or it is to be hoped will change, their condition by becoming hired labourers for others; and as their employers will necessarily be in the possession of some capital, the labour employed by them will be rendered more effective than it could be under the old order of things, where the farmer of a mere patch of ground had usually little or nothing more than his bodily exertions to assist in developing the resources of the soil. The amount of land under cultivation applied to the production of different kinds of food and the actual produce in each of the years 1847 and 1848 are given in the returns as follows:—

	1847. Acres.	1847. Produce. Qrs.	1848. Acres.	1848. Produce. Qrs.
Wheat	743,871	2,926,733	565,746	1,555,500
Oats	2,200,870	11,521,606	1,922,406	9,050,490
Barley	283,587	1,379,029	243,235	1,135,190
Bere	49,068	274,016	53,058	263,415
Rye	12,415	63,094	21,502	105,375
Beans and pease	23,763	84,456	50,749	172,500
Total grain and pulse	3,313,579	16,248,934	2,856,696	12,282,408
		Barrels, 20 st.		Barrels.
Potatoes	284,116	16,385,562	742,899	23,046,512
		Tons.		Tons.
Turnips	370,344	5,760,616	255,058	3,643,074
Mangold wurzel	13,766	247,269	12,598	220,675
Carrots			5,994	75,598
Parsnips	59,512	729,064	2,543	23,091
Cabbage			24,114	325,763
		Cwts.		Cwts.
Flax	58,312	349,872	53,863	258,600
		Tons.		Tons.
Meadow & clover	1,138,946	2,190,317	1,154,302	2,297,133
	5,238,575		5,108,062	

It is necessary to explain, that owing to the unsettled state of the country it was found impossible to collect returns in the counties of Waterford and Tipperary, so that in drawing a comparison between the result of that year and of 1847, we must deduct the returns for those two counties.—

The total number of acres under cultivation in 1847 was found to be	5,238,575
If we deduct therefrom the area cultivated in Waterford and Tipperary	432,977
The remainder will show the extent which is fairly to be brought into the comparison, viz. ..	4,805,598

The average under cultivation in 1848 was.. 5,108,062

Shewing the gratifying fact that an increase has been made in one year of .. .. 302,464 acres, exclusive of the two counties here mentioned. If the increase in those counties has kept pace with that of the remainder of Ireland, the increased breadth of land brought under cultivation in one year has amounted to 329,715 acres, or more than 6 per cent.

The produce in 1847, if we deduct that of Waterford and Tipperary, was—

Wheat	2,389,815 qrs.	
Oats	10,950,414	„
Barley	1,251,432	„
Bere	230,144	„
Rye	58,632	„
Beans	82,402	„
	14,962,839	„
Potatoes	15,102,828 brls., 20 st.	
Turnips..	5,146,490 tons.	
Green crops	913,439	„
Flax	247,856 cwt.	
Hay	2,001,673 tons.	

The proportions in which the land was employed for different purposes in 1848, on farms of different extent, are given as follows.—

	Under 1 acre.	1 to 5 acres.	5 to 15 acres.	15 to 30 acres.	Above 30 a.
Wheat	6·98	9·90	9·26	10·10	12·29
Oats	26·54	41·07	45·46	42·71	32·34
Barley, bere and rye	13·46	9·27	7·18	6·35	5·55
Beans and peas	0·94	1·01	0·98	1·04	0·97
Potatoes	37·60	23·24	17·95	15·84	11·95
Turnips	4·44	4·10	4·20	4·49	5·57
Other green crops	5·71	0·98	0·61	0·78	0·93
Flax	0·25	0·60	1·18	1·39	0·89
Meadow and clover	4·03	9·83	12·98	17·30	29·51
	100·	100·	100·	100·	100·

The stock of various kinds that existed at the time of the last census (1841) and in 1847 and 1848.—

	1841.	1847.	1848.
Horses and Mules	552,569	498,221	499,343
Asses	90,315	112,029	105,017
Horned Cattle	1,840,025	2,367,139	2,481,501
Sheep	2,091,199	1,981,635	1,809,107
Pigs	1,353,101	517,476	549,583
Poultry	8,334,427	4,956,148	5,889,412

afford a strong commentary on the distress occasioned by the failure of the potato harvest. It appears that comparing 1847 with 1841 the number of horses was less by 54,318, but the deficiency in farms not exceeding 15 acres amounted to 163,622, while there was actually an increase on farms above that area of 109,344. Of asses there was an increase of 21,714; but on the small farms there was a falling off in the number of these animals amounting to 32,955 while there was an increase on the larger holdings of 54,669. With respect to horned cattle, there was an increase of 527,114, but this was wholly experienced on the larger farms, there having been on those not exceeding 15 acres fewer in 1847 than in 1841 by 336,471, and consequently more on the larger holdings by 863,585. The number of sheep was less on the whole in 1847 than in 1841 by 109,565, but the deficiency on the small farms was 529,226, while there was an increase on the larger. The greatest deficiency has been experienced in regard to pigs and poultry, which in Ireland are especially domestic animals, and, as might be expected, the falling off is found chiefly among the cottier class. In the larger farms—those above 30 acres in extent,—there were 42,643 more pigs in 1847 than in 1841, whereas in all the smaller holdings the difference was very greatly in the other direction. On farms not exceeding one acre the numbers were 295,048 in 1841, and only 19,108 in 1847. On farms from 1 to 5 acres, there were 521,587 in 1841, and only 21,422 in 1847. In the next division, between 5 and 15 acres, the numbers were 350,825 in 1841, and no more than 80,098 in 1847. Persons holding from 15 to 30 acres kept in 1841, 215,340, and only 113,864 in 1847; whilst on farms above that size, the numbers which were 240,301 in 1841, had advanced to 282,984 in 1847. The entire deficiency of this description of stock between the two periods was 835,625, or more than 40 per cent. The diminished number of poultry was 3,378,279 upon 8,334,427, or 40 per cent, which, as in the case of the pigs, applied entirely to the smaller farms. On those above 15 acres there was an increased number, amounting to 1,048,974, shewing that the lessened number on the smaller farms was 4,427,253. The lessened number of pigs is clearly referable to the failure of the food upon which those animals are usually kept in the cabins of the peasantry; and as regards poultry, it could hardly be expected that a starving people should continue to rear things so easily convertible into food, or into that which would procure food for the owners. These facts, which are proved beyond controversy by the inquiries of the Irish government, place in a very conspicuous light the disadvantage of peasant holdings, as compared with farms which from their extent require to be cultivated by persons who, possessing some capital, are not driven, on the occurrence of the first calamitous season, to measures destructive of their own future prosperity and injurious to the public at large. The question of the advantage, or otherwise, of maintaining a class of peasant proprietors, is one upon which it would not be advisable to dilate on this occasion, but the figures brought forward in the returns under examination appear to be so important as exhibiting the consequences of farming without the needful appliances, that it was impossible to pass them by without this one word of comment. The table exhibiting the number of acres devoted in 1847 and 1848 respectively to the production of the different cereal grains, shows a result for which we could hardly have been prepared. There was a falling off in the breadth of wheat sown of 178,125 acres, or 24 per cent. upon the quantity in 1847. Of oats there was a lessened sowing of 278,464 acres, or 12½ per cent. Of barley the cultivation was lessened by 40,352 acres, or nearly 14 per cent. On the other hand, the tendency to continue dependent for a great part of their daily food upon potatoes has been shown by the Irish peasantry in the marked increase of the land devoted to their growth, which amounted to 458,783 acres or 160 per cent. upon the number of acres so employed in 1847! We hear but little of injury sustained by this root at present, and may expect that the misery through which that peasantry had to pass consequent upon the destruction of this staple produce, will be forgotten, and that they may be willing to remain in dependence upon the success of this lowest description of food, and thus be liable at any time to a recurrence of the horrors of famine. We are now for the first time in the history of this country enabled to record, with anything approaching to accuracy, the actual and comparative result of two consecutive harvests. The result is such as to prove—if indeed any proof to that effect could be required—of how much, of how vital importance it is to know the truth upon this most momentous subject. We have seen that the breadth of land devoted in 1848 to the cultivation of the cereal grains was much less than in the previous year, and the figures which record the result of that cultivation serve to show that the actual produce of the land, in all its most important objects, was such as greatly to aggravate the evil thence to be expected. It appears upon calculation that the produce of the cereal grains in bushels and of potatoes in tons in each of the two years was as follows:—

	1847.	1848.
Wheat .. .. Bushels	31·4	22·
Barley .. .. —	39·	37·3
Oats .. .. —	41·8	37·6
Bere .. .. —	44·6	39·7
Rye .. .. —	40·6	39·2
Potatoes .. .. .. Tons ..	7·26	3·87

If the deficiency here shown were equally great in Great Britain, we can be at no loss to account for the very large importations of foreign grain imported during the twelve months from August 1848 to August 1849, and which importations, great as they have been, would seem to be in no degree beyond our requirements. The quantities so entered have been as follows:—

Wheat	4,323,645 Quarters.
Barley	1,323,927 —
Oats	1,221,683 —
Rye	220,629 —
Peas	266,475 —
Beans	531,177 —
Maize	2,287,283 —
Wheat Flour, 3,508,375 cwt. =	1,002,393 —
Total ..	11,177,512 Quarters.

'On the Use to be made of the Ordnance Survey in the Registration of Judgments and Deeds in Ireland,' by Prof. Hancock (of Dublin).—He said that the Ordnance Survey at present was used to ascertain boundaries for all public purposes, and was also extensively used by private parties. The townland maps were complete for all Ireland, on which the name of every townland was marked with the number of acres contained in it. From the structure of the maps they afforded the greatest facility, having tenements marked on them, as well as townlands. For all the boundaries of tenements were on the sheets, except in some of the northern counties, the survey of which was first published, and on which the boundaries were now being inserted. On the plates from which the maps were taken, all these lines were laid down in bran. He proceeded to show that the Ordnance Survey was thus adapted to be made the basis of a general registry of land, by requiring every deed or judgment to contain the names of the townlands and number of tenements affected by it. The reason which hitherto prevented the adoption in England of a plan of registry with reference to a general map, was the expense. As that expense had been incurred in Ireland, there was no reason why the maps should not be used. He proceeded to explain how the Survey might be used in registering judgments in Ireland; and said that the effect of the adoption of his suggestions would be to get rid of the delay and cost of negative searches for judgments and for deeds, which must now be incurred on every sale of every portion of land however small. In every case where the seller had a common name, or sold a number of portions of land, the delay and cost were at present excessive—and in the sale of small properties operated as a complete barrier to the transfer of land. The changes which he suggested would also diminish the delay and costs of Chancery proceedings,—and the names and residences of all parties entitled to notice respecting the sale of any portion of land would be at once disclosed. This would lay the foundation for applying the doctrine of *market overt* to land, and obviate the lengthened investigation of title required in every case of sale; as with a perfect registry based on the Ordnance Survey, it might safely be enacted that after due notice to all parties on the register a public sale by a party having a power of sale should cause a parliamentary title, the purchase-money, if anybody required it, being lodged in the Court of Chancery. He concluded by quoting the opinion of the Real Property Commissioners, that "the subject of registry of deeds and instruments relating to land exceeded in magnitude and importance all the subjects which they had to consider," and "that the regulations of the Act of General Registry in Ireland were imperfect, and occasioned unnecessary trouble and expense."

Section G.—Mechanical Science.

President—Mr. R. Stephenson, M.P.
Vice-Presidents—Messrs. W. Blake, W. Fairbairn, F. Osler, T. Webster.
Secretaries—Messrs. W. P. Marshall, C. Manby.
Committee—Messrs. J. G. Appold, W. Baker, R. Davison, C. Fox, J. Henderson, E. Hodgkinson, Rev. S. King, Messrs. J. G. M'Connell, R. Martineau, G. Nasmyth, R. S. Newall, R. Roberts, J. Taylor, F. Whishaw.

'On a Method of supplying the Boilers of Steam Engines with Water, by Mr. W. S. Ward.—Mr. Ward's suggestion was to use a small supplementary pumping engine, having a working cylinder with valves so arranged that the piston may be put in motion by either steam or water passing through it, to be supplied with steam, by a steam pipe, the entrance to which is somewhat narrow, and inserted in the boiler to be supplied a little above the level at which it is desired to maintain the water therein. Such aperture should also be about the centre of a marine boiler. The working cylinder should be attached to a pump of such size as to be easily worked by the pressure of the steam. The exit pipe of the steam cylinder must communicate with the inlet pipe of the pump, so that if the cylinder be actuated by steam, the steam will be condensed, and its heat communicated to the water to be supplied to the boiler; or if the working cylinder be worked by water proceeding from the boiler, a considerable part of such hot water will be returned by the pump. The mode of operation of such apparatus will be, that whenever there is a working pressure of steam in the boiler, the apparatus will be in action; but if the level of the water be below the aperture of the small steam pipe, the action will be moderately rapid, and

a supply of water be pumped into the boiler; and when the water in the boiler rises to the aperture, this being small, will be as though choked by the water, which will be forced through the working cylinder, moving the piston and pump very slowly; a portion of the water thus escaping from the boiler will be returned by the pump. Such last-mentioned action cannot continue long, inasmuch as the level of the water must be reduced; therefore the average level of the water in the boiler will be, with slight oscillations, maintained at the height of the supply pipe.

In the course of a brief discussion which followed, the President said that it was a new and ingenious idea, but one which he was afraid was not practically useful.

A 'Description of a Patent Tide-winding Apparatus' was read by Mr. R. Roberts.

A 'Description of the Excentric Sheet-Metal and Wire Gauge' was read by Mr. R. Roberts.

'On the Britannia Bridge.'—The President (Mr. R. Stephenson, M.P.) gave an interesting sketch of the causes which produced the late accident; and of the difficulties which have stood in the way of finally completing the work.

'On Chain Pipes for Sub-Aqueous Telegraphs,' by Mr. Whishaw.—Three links of a full-sized pipe for inclosing the wires of electric telegraphs in crossing rivers, &c., were laid before the Section. As the title implies, the pipe is formed by so many links connected together by sockets—each link varies according to circumstances from 18 inches to 24 inches in length, and from 1 inch to 2½ inches internal diameter, according to the number of wires to be inclosed. These pipes being of wrought iron are exceedingly strong—and are required merely as a protection to the wires, which are previously insulated by means of gutta percha. Pipes of somewhat similar construction are laid under the Rhine and other rivers in Prussia—where the underground system of telegraphs is adopted by the Prussian Government (already to the extent of 1,200 miles)—although many of the railway companies suspend the wires between posts, as practised in England, America, France, &c.—The discussion which followed was brief; its purport was generally to signify approbation of the invention.

'On the Superiority of Macadamized Roads for Streets of large Towns,' by Mr. J. P. Smith.—There is a prevalent feeling against the employment of broken stone roads for streets, because, as they are usually managed, they are the cause of great inconvenience to householders and others by the dirt and dust they occasion, and also because their maintenance and repairs are very expensive, while the draught of vehicles upon them is very heavy. The object of this paper is to prove, from long continued experience on a large scale, that those objections do not necessarily accompany the use of such roads. In discussing this question the interests of two parties must be considered: those who principally use the road, the owners and employers of horses and vehicles,—and those who pay for it, the rate-payers, who are they who would be injured and annoyed if it were unduly expensive or unnecessarily dirty, dusty, and noisy. It is a common error to consider that road the cheapest which costs the least in direct expenditure. If, however, this so-called cheapest road causes waste of horse-power, undue wear and tear of horses and vehicles, loss of time by being unfit for rapid transit, and occasions loss to the inhabitants by filling their dwellings with dust and covering their clothes with dirt, it is evident that such a road is really very dear. There is an apparent diversity of interest between those who use and those who pay for our public streets; as the principal loss from bad roads falls directly upon those who keep or employ horses and vehicles, while the expense of road repairs falls upon the inhabitants generally. A little consideration, however, will show that this diversity of interest is more apparent than real. It is the interest of all that there should be easy, safe and cheap means of transit through the public streets; and any increase in the cost of transit is a source of indirect expense even to those who have no horses of their own, as it must add to the cost of everything carried through the streets, and of all hired vehicles and of all the numberless conveniences which accompany residence in a large town. It must also be remembered that it is very wasteful to allow a road to go out of repair, since it is less costly to keep a road up than to restore it. That roadway is best for the owner or user of a horse or vehicle which can be travelled over most easily, safely, quickly, and cheaply; and that ease, safety, speed, and economy are to be obtained by having the road firm, even, and smooth, and perfectly free from mud or dust, or any form of unattached materials. It is evident that the same qualities will render the roadway most free from noise, dirt, and dust, the three great causes of annoyance and injury to the inhabitants of all ordinary streets. The question which remains to be considered is, whether the advantages of good roads to the inhabitants generally are worth their cost? If the question had to be decided in accordance with the interest of the users and owners of horses merely, no doubt whatever would be entertained. Of whatever nature the surface of a road is to be, it is essential that its foundation should be of firm material, well consolidated, and perfectly drained; if not, the crust becomes loosened and destroyed, the road is rough and uneven, and wears into holes and ruts. Having obtained a good foundation, the next point is to cover it with a hard, compact crust, impervious to water, and laid to a proper cross section. The stones must be broken to one regular size, well raked in, and fixed there by a binding composed of the grit collected in wet weather by the sweeping machines and preserved for this purpose. This binding must be laid on regularly, and watered until the new material is firmly set, which it will do very quickly and with the regularity of a well laid pavement. The sharp angles of the stones are preserved, and there is both great saving of material and a firmer crust formed than by the common method of leaving the material to work into its place without the use of binding,—in which case the angles of the stones are worn off and reduced to powder, and at least one-third of the material is wasted in forming a binding in which the stones may set. By the improved method the binding is formed of material that would otherwise be useless. Many road-makers object to the use of binding, on the ground that the road is rendered rotten by it, and that when the road is set it has to be carted away again. This is apt to be the case under bad management; and when ordinary soil is used, the fine particles of which work it into mud and keep the road from setting firmly. But the coarse grit obtained by the sweeping-machine off the roads is the very same material as is produced by wearing away the angles of the stones, and when judiciously applied to a new coating it will speedily become as well consolidated and firm as an old road. In the common method not only is there great waste of material, but the loose stones occasion delay by their resistance, great fatigue to the horses and danger to their feet, while the noise produced by their grinding together is annoying to the inhabitants. Upon the improved method the inconveniences of road repair are incomparably less than those of pavement. Both recoating and repairs may be made without stopping the traffic. Under no circumstances must any imperfection of surface be allowed. If a hollow be not immediately stopped it very quickly extends over the surface. All loose stones should be carefully picked, as every loose stone passed over by heavily laden carriages, if not ground to powder, breaks the crust of the road, and if water be permitted to lodge on the surface it will cause great mischief. It is the neglect of these essential precautions that has led many to consider macadamized roads expensive. They *are* expensive if neglected. On a well-made road heavy showers do good, by cleansing them:—so, also, does artificial watering if the road be clean or swept quickly after it is watered. A road which is perfectly dry loses its tenacity and the surface grinds into dust; whence the economy of judicious watering in hot weather, which preserves the road as well as prevents the annoyance of dust. The practice so common in London and elsewhere of heavy watering a dirty road without cleansing it, and thereby converting the dust into mud, is very injurious to the road, and merely changes one nuisance into another,—dust into mud. A great source of waste, both to those who use and to those who repair a road, is to allow it to be dirty. The draught on a dirty road is twice as heavy as on a clean one,—that is, a horse must exert double force to draw his load with the same speed. The cost, however, of employing double force is so great, that the expedient of diminishing the speed is generally adopted, as a horse can exert greater pulling force at a slower pace,—less power being required to carry his own body. It often happens that the extra resistance occasioned by dirt diminishes the speed one-fifth or one-fourth. The effect of the dirt, therefore, is to increase the work by twenty or twenty-five per cent. It will easily be believed that such a waste far exceeds the cost of the most perfect cleansing. This is the case when cleansing is done by scrapers (the greatest enemy a macadamized road has to contend against). By their use the stones are dragged from their places, and the adhesive dirt is not effectually taken away. Sweeping is the only mode of cleansing that should be allowed, either on streets or on turnpike roads. Sweeping by the wide brooms of Mr. Whitworth's machine is preferable to all other modes of cleansing yet tried. It must be evident, that the fact of these wide brooms sweeping longitudinally, with a pressure that can be adjusted according to circumstances, tends powerfully to preserve the road and to consolidate its surface. They press most upon the ridges, and least upon the hollows, thus tending to reduce the former, and fill up the latter. When the dirt is stiff, and adheres firmly to the stones, it should first be well watered, when it may be completely removed by the machine, without disturbing the crust, leaving the surface firm and compact. The use of water for this purpose has been objected to by high authorities, on the ground that it *does* remove the useful grit; but the contrary has been proved by ample experience. I have found that the use of the sweeping machines, with the proper employment of water, has reduced the amount of material required for the repair of roads in Birmingham one-third,—namely, from about 20,000 to 13,000 cubic yards. The first-named amount is the average for seven years preceding the introduction of the machines,—the latter of the three years subsequent. I communicated these details to a friend in London, and he determined to test their correctness. The following is the result of his experiment, to settle whether useful grit was or was not removed by water and machine sweeping. On the 22nd of March last, the Quadrant, Regent Street, was covered with a thick layer of dirt, which was causing great annoyance as well as injury to the road, but could not be removed by scraping, without removing also much of the new stone, to which it adhered. It was determined to sweep half of it dry, and half after proper watering. This was done, and the sweepings removed were washed, to separate the refuse from the stony matter mingled with it. One-third part of that which was taken dry, consisted of coarse grit, which would have been useful on the road—one-twelfth part only of that which was removed in the form of slop was stony matter; and that was so completely pulverized, as to be of scarcely any use;—it had done its work. After the two portions of the road had been cleansed, the difference between them was very striking. That which was swept dry was still covered with adhesive matter, which was lifted by the wheels, together with the stones to which it adhered, the whole road being rough and uneven; the portion which had been swept with water was perfectly even and smooth. On the 24th both portions were swept, but only one quarter as much dirt was taken from that which had been water-swept as from the other. On the 26th it rained, and three times as much slop was taken off the part of the road which had not been water-swept on the 22nd. The preservative effect of water machine sweeping was most evident by the decidedly better condition of that portion of the road cleansed in this effective manner. The great objection urged against macadamized roads for streets is the annoyance by dust and dirt which they occasion, and many persons prefer submitting to the deafening noise of pavement in order to avoid these; but this would not be the case if water and machine cleansing was adopted, the cost of which would be saved in diminished wear and tear. The entire cost of cleansing and watering Birmingham is about 5,000*l.* per annum,—or less than one penny per week for each of its inhabitants. It has been objected to macadamized roads that the

draught upon them is heavier than upon pavement; —and with carriages altogether similar this is the case, and especially so with vehicles travelling slowly. But it must be remembered that the proportion of the draught is only one of the circumstances by which the labour of the horse is to be estimated. Another very important consideration is the surface which gives the horse the safest footing; and his footing on pavement is so much less secure than upon a good broken stone road, that he does not receive the full advantage of the smaller draught. Again, carriages—especially those travelling quickly —are exposed to much more violent concussions upon pavement than upon a smooth macadamized road:—consequently, not only must the carriages be stronger and therefore heavier, but the increased frequency and violence of the concussions consume a larger portion of power, which goes far to counterbalance the diminished friction. There can be no doubt that the wear and tear of both horses and vehicles is far greater upon pavement than upon macadamized roads. In reckoning the real cost of a road, all expenses attending its use should be calculated; and if this were done, pavement would be perceived to be exceedingly expensive. Carriages roll so smoothly over a well maintained macadamized road, and horses are so little injured either by falls or strains, that I conceive the wear and tear upon them is not half of what it is on pavement.

OUR WEEKLY GOSSIP.

It is with more than common regret that we announce the death, on Wednesday, the 12th inst., in Dublin, from an attack of the disease which is carrying lamentation into so many homes, of Dr. W. Cooke Taylor,—well known in the world in which we labour by a large body of useful and varied publications. Dr. Taylor was one of the oldest contributors to this paper; and in the course of a long and extended literary acquaintance, we have known few men whose acquired literary knowledge ranged over a wider field,—and none whose pen was more immediately at his command, or whose knowledge was more ready for instant circulation. Dr. Taylor possessed a working power which deserves to be called remarkable; and numerous as are his works, and considerable as is their value, to this diffusion of his mind over many themes it is owing that he has not left behind him something more important to literature and more beneficial to his own fame. Writing under the impression of the sudden intelligence, we scarcely find ourselves equal to the task of due characterization; but it has been so satisfactorily performed by a writer in the *Daily News* that we take the liberty to adopt his estimate.—Dr. Taylor "was a native of Youghal, in the county of Cork, and in early life was engaged in the scholastic profession, having been usher at the academy of Dr. Bell in Tipperary. He possessed great energy and industry, and was a most laborious member of the literary body, his pen having been applied to a variety of subjects, critical, historical, and political. * * His style, like that of most literary Irishmen, was formed on a rhetorical model, and though making a parade of logical method, was frequently verbose. The branch of letters to which his own taste would have led him, if he could have chosen his subjects, was scholastic disquisition; for which, with his great industry and powers of research, he was not ill-fitted,—though it may be doubted whether he had the subtlety required for refined criticism. His understanding was remarkably versatile, and he rapidly mastered the general principles of any science to which he applied himself. After many years incessantly devoted to popular literature, he had acquired a great variety of miscellaneous knowledge. Of late years he applied his pen to party politics, and a number of pamphlets and letters (most of them pseudonymous) have been not incorrectly attributed to him. * * He was a zealous writer in favour of the agitation for free trade, and equally zealous against agitation for the repeal of the Union."—In most of what is here said we agree with the writer: but would again remark, that the qualifications which he applies to Dr. Taylor's exercise of his powers we, while we admit them, attribute only to the voluminousness of the exercise and the consequent hurry of his production. With more leisure, he had the skill which would have corrected his own verbosity and the taste which would have refined his own criticism.

The report of the Commission on the management of the British Museum is still unpublished, although that which purports to be a sketch of it has appeared in the columns of a weekly contemporary. On that document, unauthenticated so far as we can see, we shall offer no remarks; but we cannot help asking to what mysterious complication it is owing, that after two sessions of inquiry no portion of the voluminous evidence, long since printed and distributed among certain persons, is accessible to the public? This unusual secrecy would seem to confirm—or it may have originated—a current rumour that the evidence is generally so unfavourable to the system of management hitherto pursued, especially in the department of Printed Books, that it is deemed advisable to keep it back for as long a time as possible. Meanwhile, we are constantly hearing complaints of the inefficiency of that system. To the other books which are not to be had in the Reading-room we must add—as we have elsewhere remarked—the first volume of the 'Materials for the History of Britain,' published several months ago. It is wholly inexcusable that that work, executed at the national expense, should not be available to the public frequenting the Museum. The high price at which it is published places it beyond the reach of persons of limited means,—and forms of itself a reason for placing it on the shelves of the Reading-room without delay. It appears, however, that all new books must be registered in the Secretary's department:—where the work is performed about as speedily as it would be in Chancery. We should imagine the numerous staff of assistants in the Library to be quite equal to the registration of new books without the intervention of the Secretary: whose office is said to be marked for reduction,—and therefore may be presumed to be of no great utility in the general machinery of the institution.

The admirers of Miss Bremer's writings will probably be interested to know that she will be in London in a few days, on her way to the United States,—where she purposes to make a tour of twelve months.

M. Guizot—whose asserted return to the fields of literature we spoke of some time ago—is, we are now informed, quietly residing at Val Richer, near Lisieux, —where he is engaged, as its first fruit, on a new edition of his work on the English Revolution, with an Introduction.

We are glad to find that it is not all officers interested in the custody of the Public Records who entertain the opinion that the custodianship confers any right to deal with the national muniments otherwise than *as* custodians—or any especial immunity from inquiry or blame in respect of the discharge of their office. We are glad to reinforce our own views by those of a gentleman of the class in question,—who puts the argument in a new light, which we think deserving of attention.—

"I am extremely rejoiced [he says] that the impropriety of an Assistant-Keeper's producing public and judicial records to extra-judicial assemblies and in places alien to the legal place of custody of such records, has been noticed in your columns.—When it is considered that the legal evidence afforded by records upon questions of constitution and legal usage, and also of private title and tenure, may be seriously affected by such indiscreet acts, the prompt censure which you have uttered is a public service. Mr. Black must have known that the withdrawal of a record from its place of deposit exposes it not only to the possibility of loss but to the destruction of its legal conclusiveness and efficacy for the future. No contents of a record can be given in evidence unless that record be *always* found in its proper place of legal deposit and custody;—and how can such custody be known and certified if the record be handed about upon unauthorized occasions in places alien to its legal custody. So jealous is the law of evidence upon the point of "custody," that numerous documents of veracity cannot now be received as evidence (unless by consent) because they are not in their legal place of custody; for instance, the Cartularies and Rolls in the Cottonian and Harleian Collections and in similar depositories. It is difficult to conceive how Mr. Black can have obtained the authority of the Master of the Rolls to countenance or justify a course of proceeding that if persevered in would ultimately vitiate the legal evidence deducible from every document or record in his custody. No one can appreciate more than myself the entertaining information derivable from our national muniments; which have been for upwards of eight centuries preserved with the greatest care (as their present condition will manifest to the most incurious observer) notwithstanding the frequent resort made to them in former times—far exceeding that of the present. But when it is considered that the main use of these venerable remains is to verify constitutional and historical acts, and to decide questions upon title and tenure,—the incidental allusion made therein to customs, habits and associations of past ages must not be made a pretext for destroying or impairing their authority as legal evidence in those respects for which they were created:—more especially since the Act of 1 & 2 Vict. cap. 94, provides for their inspection by all classes at their places of custody at an extraordinarily cheap rate.—One of your correspondents seems to lament the absence of one of the thick unreadable *Blue Books* hitherto published every year upon the subject of the Custody of the National Records. I cannot sympathize with him: for there is little else in them than the dullest of the most dull of tabular statements—showing how many parchments have been flattened, cleaned, mended, new-backed, labelled, and packed up in the course of a year.

When Rowland Hill first broached his idea of a penny-postage system the sages shook their heads doubtfully. Postmasters and postmistresses all protested against it,—revenue officers looked aghast,—ministers pooh-poohed it. The thing was laughed at, written down, talked down; but it was a true thing—and it made its way. The public became converts after a little investigation—and *would* have it tried. And so it triumphed,—and has become a great and successful "fact." As usual, the fact thus fixed has given birth to a new idea—in its turn, sooner or later, to become a realized and tangible thing. A letter travels now from the Isle of Skye to Germany for a penny: why not from London to Paris or Pekin?—asks an enthusiastic American. We see no difficulty in the way which did not present itself to the mind on the first thought of Rowland Hill's plan. But our countrymen are again, for the present, incredulous. They admit that an ocean penny postage would be a grand achievement, and well worthy a great naval power like ours or like the United States. But the idea of carrying a letter from Manchester to Mexico, or from Calcutta to California, for a penny seems too extravagant for their immediate entertainment. A change "will come o'er the spirit of their dream." The matter is in progress of being taken up by practical men. The following letter is significant of the change that is about to happen:—

Chamber of Commerce and Manufactures,
Manchester, August 30.

My dear Sir,—The important question of an ocean penny postage has received my consideration, and I have arrived at the conclusion that to establish it is practicable, and would be exceedingly beneficial to the people of every country. As far as I have been able to ascertain the opinions of the directors of this chamber upon this great question, they are decidedly favourable to the establishment of so powerful an auxiliary of communication and civilization as they believe the ocean penny postage would become. Having witnessed the advantages, moral, commercial, and fiscal, of our inland penny postage, I have the greatest confidence in anticipating results not less favourable, but more universal, from an ocean penny postage system, and I shall be happy in promoting its establishment so far as I may possess power and ability. I beg to assure you that your exertions to facilitate and cheapen postal communications between the distant countries of the world are regarded here with deep interest, and an earnest desire that your laudable labours may be rewarded with success.—Believe, &c.

"Elihu Burritt, Esq." "Thos. Hazley, President."

The public will feel that it is not likely to be led astray into the paths of merely romantic speculation by the President and Members of the Manchester Chamber of Commerce and Manufactures. These are not the men to assert in tropes what they cannot prove in figures. They are owners of ships—and have correspondence with all corners of the earth. With their stamp on it, the scheme of ocean penny postage may be removed from the category of empirical agitations and regarded as one of those ideas which require time only to perfect them. Peace and free postage are the pet "impossibilities" of the hour. Steam and lightning conductors have had their days of denial—and of victory.

THE NILE.—NOW OPEN, Afternoons at Three, Evenings at Seven o'clock, at the Egyptian Hall, Piccadilly, a new and splendid MOVING PANORAMA of the NILE, exhibiting the whole of the stupendous Works of Antiquity now remaining on its banks, between CAIRO, the capital of EGYPT, and the Second Cataract in NUBIA. Painted by Henry Warren, James Fahey, and Joseph Bonomi, from Studies by the latter, made during a residence of many years in Egypt.—Stalls, 3s.; Pit, 2s.; Gallery, 1s.

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Admission, 1s.; Schools, Half-price.

DIORAMA, REGENT'S PARK.—NOW EXHIBITING, the VALLEY of ROSENLAUI, Bernese Oberland, with the effects of a Storm in the Alps; and the INTERIOR of the CHURCH of SANTA CROCE, at FLORENCE, with all the gradations of Light and Shade, from Noonday to Midnight.—N.B. The Grand Machine Organ, by Gray and Davison, will perform in both Pictures. Open from Ten till Five.

FINE-ART GOSSIP.—An exhibition of framed examples of the best engravings of the several schools is about to be opened in Pall Mall, by Mr. Francis Graves. This is the very exhibition which we have urged on Government for a long time past,—and for the due performance of which we have had a kind of pledge from the Trustees of the British Museum. But a certain torpor of inaction which has so long paralyzed both the elected and the hereditary Trustees of that institution has since extended to the Committee of Inquiry itself—and both seem buried under the weight of the MS. Catalogue of Books suggested by the one and, as it is whispered, recommended by the other. Mr. Graves begins with choice examples of Marc Antonio and Albert Dürer,—specimens of Rembrandt's several styles,—choice pieces by Hollar, &c. The whole will be arranged into schools:—such as the Italian, Flemish, Dutch, French, English, &c. Mr. Graves contemplates, it is said, adding a chronological series of illustrations showing the history of mezzotinto engraving from Prince Rupert's rough scrapings to the finished performances of Mr. Samuel Cousins. If a printseller can make a popular exhibition in this way—how much more useful and popular a one might the Trustees of the British Museum make with the rich resources at their command! Two hundred and fifty pounds expended on glass, and fifty pounds or less expended on school-boy frames, would serve to exhibit a large and instructive series of etchings and prints. Look at the attraction of our printsellers' windows:—and judge from that what would be the interest exhibited in a series of the best prints arranged to illustrate the history of a beautiful art.

It is a pity that another equestrian figure cannot be provided for the vacant pedestal in Trafalgar Square. Its absence gives an awkward, unfinished look to the embellishments of the place. A single statue of the kind without its companion one is worse than none. Yet, the figure itself tells well: combining as it does very picturesquely with other objects—particularly with the Nelson Column as seen from many points of view. With regard to the last-mentioned monument, there is reason for apprehending that, however satisfactory they may be in themselves as works of Art, the bronze bas-reliefs with which the pannels on the pedestal are to be filled in will in a short time after being put up be scarcely distinguishable—and thus blankness will be exchanged only for blackness. The latter, however, will be in keeping with the capital of the column: which, as might have been foreseen from the first, shows only as a dark mass whose details are entirely lost. We doubt if bronze be fit for other than small ornamental articles which are intended for close inspection, or large single figures and statues which however viewed show their outlines distinctly. We question if it should be applied to rilievos on a large scale, unless some method could be found of keeping the surface of a uniformly clear and clean hue, so as to exhibit light and shade both forcibly and distinctly. As to the "monument" itself, since a column it was to be, it is to be regretted that Mr. Railton did not venture to deviate from precedent and routine by greatly expanding the base, by means of a boldly sweeping *apophyge*, similar to that given to the columns within the temple at Bassæ. Had this been done, the pedestal would have been increased in proportion,—and the column would have stood far more firmly and majestically than it does now. Such, however, is the respect paid to precedent, that Art is ruined by the very course intended to preserve it.

Those of our readers who are about to visit Paris may like to be informed that a public and supplementary Exhibition has been opened, in the Orangery of the Louvre, of those works which have received prizes from the State and those which the Government has purchased for the use of the nation.

The Paris journals report the death of the landscape painter M. Théophile Blanchard.

The French have been inaugurating at Beaune, with the usual honorary accompaniment of deputations from the great scientific bodies, a statue, by M. Rude, to the memory of their great mathematician Monge,—one of the founders, as many of our readers know, of the Polytechnic School.

The Twenty-ninth Report (just issued) of Her Majesty's Commissioners for building New Churches contains a schedule of twenty places where such churches are building towards the erection of which the Commissioners have made conditional grants of money. One of the columns in this schedule is headed 'Style and Character of the Church;' and the descriptions given therein afford a striking illustration of the style of architecture prevailing at present in the different dioceses of England. The only *un*-gothic building in the whole twenty is Mr. Harness's new Church at Ennismore Gardens, Knightsbridge:—which is described as Italian of the fourteenth and fifteenth century. We have one Norman of the eleventh century,—one Pointed Gothic, with tower,—two Early English of the twelfth century,—two Early English (no century or period named),—two Gothic of the thirteenth,—four Gothic of the fourteenth,—two Gothic of the fifteenth,—one Decorated Gothic of the fourteenth,—and three described as "Gothic" and nothing more. Perhaps they may be Churchwarden's Gothic,—like that now in progress at Romsey since Mr. Ferrey was set aside by a churchwarden-mason bit with the mania of architecture. We seldom see a bad Gothic church now-a-days. The change from such classic misconceptions as St. Peter's, Pimlico, St. Anne's, Soho, and Christ Church, Marylebone (the classic churches of a few years ago) to such infinitely superior edifices as Camberwell New Church by Scott and Moffat, Christ Church, Notting Hill, by Mr. Cundy, and Miss Coutts's new Church at Westminster by Mr. Ferrey, may indeed be looked upon as matter of congratulation by all true lovers of architecture.

MUSIC AND THE DRAMA

HAYMARKET.—The French farce called 'Un Oiseau de Passage' has been translated for this house under its title of 'A Bird of Passage,'—and was produced on Monday evening, being acted by the Adelphi Company. The burthen of the piece rests on Mr. Wright; who as one *Mr. Carey Chicks* goes about making all his acquaintances uncomfortable by dropping mischievous insinuations,—thereby inducing one to become jealous, another faithless, and another miserable, until he brings upon himself the vengeance of the entire *dramatis personæ*,—and escapes only by appealing to the audience in a neat address, which extorts applause and brings down the curtain with effect. This little drama is open to certain critical objections on the score of its conduct. Too much time was lavished in preparing the incidents; and the playwright has not been decided enough in the expression of his principal character to enable us to judge whether the actuating motive be malignity or imbecility. But Mr. Wright's interpretation of it was, at all points, amusing.

SADLER'S WELLS.—On Wednesday 'The Merchant of Venice' was revived: the part of *Shylock* by Mr. Phelps, and that of *Portia*—for the first time—by Miss Glyn. In *Portia* Miss Glyn had a character that harmonizes well with the broad, classical style of her acting. Her vivacity, in the early acts, is obviously restrained by dignity of deportment:—even her love partook of princely reserve. But in the trial scene her measured elocution told with significant effect. The speech on mercy was powerfully delivered. The apparent reluctance with which *Portia* condescends to effect her purpose by a mere legal quibble was brought out with great artistic tact. There was something, too, quite natural in the womanly nature breaking through the judicial assumption,—and occasionally exhibiting in an irrepressibly passionate tone the indignation of the speaker. The moonlight scene was beautifully rendered. At the conclusion of the play Miss Glyn was called before the curtain. The house was crowded.

MISCELLANEA

Bartholomew Fair, Smithfield.—As a gradually fading vestige of old London, we have for many years past invariably visited Bartholomew Fair, that we might watch its decline and see it expire. The light flickers in the socket. On Tuesday se'nnight, when we paid our accustomed visit, we found that one or two stalls for gingerbread, two or three gambling-tables for nuts, and one "puppet-show," constituted the fair. A few people were scattered about, but the majority of them were policemen. The moon was shining brilliantly on the "smooth field,"—the scene of knightly jousts and religious burnings in times gone by (and of an abominable nuisance in the present day), and illumined the church built by Rahere 740 years ago, and the hospital he founded. If it were our part to moralize and evolve "reflections," we might fill a page with such a subject.—*Builder.*

The "Mauthe Doog."—Allow me to correct a small orthographical error into which your Correspondent E. F. has been led by Waldron when writing in your last number [page 911], on a subject of Folk-Lore. The "Mauthe Doog" of Waldron ought to be written *Moddey dhoo*—literally translated *Dog black*; the Manx, like the Gaelic and cognate languages, placing the adjective *after* the substantive. As your Correspondent speaks of *The Doog* as still haunting the Duddon Sands, it is clear he has taken Waldron's *doog* to be the substantive answering to our *dog*. The word "dhoo" is the well-known Gaelic "dhû," black. The substantive "Moddey" is the common Manx for dog. In the neighbourhood of Peel is a hill still called "Cronck y Voddey," the *hill of the dog*:—whether in commemoration of the "Spectre Hound in Man" I cannot undertake to say.

J. G. CUMMING.

The College, Castletown, Isle of Man, Sept. 11.

The Drainage of the Haarlem Lake.—An Amsterdam letter states, that the difficult operation of draining the sea or lake of Haarlem is being carried on with the greatest activity. The works are not even suspended on Sundays or *fête* days; nay, they are sometimes continued during the night. During the month of August the waters of this immense lake were lowered to the extent of 27¾ inches, Dutch measure. It is hoped and expected that they will be entirely drained off before the month of March, 1850.

The Public Libraries of the United States.—The aggregate number of volumes in the public libraries of the United States is about 1,294,000, distributed among 182 libraries. 43 of these libraries contain over 10,000 volumes each,—nine over 20,000 each,—and only two over 50,000. The library of Harvard University, the largest on the other side of the Atlantic, contains, together with the libraries of the law school and divinity school, upwards of 70,000 volumes.

Restoration of Ely Cathedral.—The Dean and Chapter of Ely have published a statement of the contributions which they have received towards the restoration of their Cathedral and the formation of a new choir. Contracts have been entered into for a new open screen, for the throne of the bishop and the stall of the dean, and for new sub-stalls, upon a scale and character suited to the magnificence of the church. They are to be finished before the 1st of March, 1851, and their cost will exceed 4,200*l.* The superior stalls, the work of the great architect Allan de Walsingham, are to be restored as nearly as possible to their original condition. Plans are in progress for the removal of the organ to the north side of the choir, with a case and fitting in full accordance with the stall-work. The other works are advancing: the beautiful canopy-work next the altar of the chapel of Bishops Alcock and West, which was nearly destroyed, has been restored. The Dean and Chapter have been compelled, from a sense of imminent danger, to undertake a very extensive repair of the southern transept; the principal timbers of the roof of which were found to be rotten, and the upper walls and arcades, upon which they rested, seriously dislocated. It is intended to replace the mutilated sculpture of the timber cornice, the painting of the roof, the ancient decorations of the walls, and to open partially the arch of the western aisle.—*Builder.*

TO CORRESPONDENTS.—One of the Million—J. F. M.—Nimrod—Amateur—H. B.—A Member of the Athenæum—H. L. T.—Brevipen—G. F.—received.

A CONSTANT READER is referred to Prof. Schönbein's 'Account of Researches in Electro-Chemistry,'—and his Report on Ozone in the 'Transactions of the British Association,' vols. 9 and 14.

PENNY BANKS.—We cannot give our corrrespondent S. H. B. the information which he seeks:—but it is easily attained.—A paragraph in our 'Gossip' of to-day may, however, possibly serve his purpose as well.

Errata.—P. 889, col. 2, l. 71, "from Batty and Langley," dele *and*.—P. 891, col. 2, l. 59, for "covered" read cowed.—P. 917, col. 2, l. 69, for "tone" read *tour*.

'BLANCHE and LISETTE,' the new Ballad by the Author and Composer of 'Jeannette and Jeannot.'—Miss Poole introduced a new Ballad, 'Blanche and Lisette,' by the same, which is an excellent song, and was well sung. Some three years ago, we predicted success for the famous "Conscript Songs;" wherever the English language is spoken, there were we right: wherever the English language is spoken, there the "Jeannette" songs are sung, and we expect that the same brilliant future awaits 'Blanche and Lisette,' for the melody is equally pretty, quaint, and original, and the poetry has that touch of nature which makes the whole world kin." Post free 2s.
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